Maximising Production of Weaners and Preparing Steers for Marketing

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Market desitination for cattle post-weaning

For cattle bred in central Australia, there are three main market destinations that can be considered:

1. Boat cattle – these are cattle destined for the live export trade
2. Feedlot feeders – typically these cattle would be transported east to be fed in eastern feedlots for various markets (domestic, Korean, Japanese)
3. Bullocks – these are cattle that are suitable as grass fed bullocks and are trucked south to market.

This paper will concentrate mostly on preparing cattle for feedlot or live export.

For any production system that is producing weaners for a market, there are two main issues every producer must address:

1. Maximize calves weaned/cow/year. The optimum is 1.0, however there are many factors that will affect this.
2. Minimize the health issues that occur once the cattle reach their destination (boat or feedlot).

Maximising calves weaned/ cow/year

Calves weaned per year is the end point of the reproductive program that is in place on any enterprise. There is a whole range of factors that can impact on a breeding herd to give a suboptimal weaning performance.

As with any production system, it is important to know:

- Where are you at now?
- What is causing the loss of performance?
- What can you realistically achieve?
- What can you do about getting there?

The aim of this paper is to explore some of these issues.

Studies have shown that body condition score is one of the single most important factors affecting weaning rate and weaner performance. This work showed that thin cows were less productive than cows in good body condition due to:

1. Lower pregnancy rates
2. Lower weaning weights
3. Lower calf surviveability.

On a body condition score system of 1 to 9, BCS3 cows were only 48% as productive as BCS5 and 6 cows (Table 1).

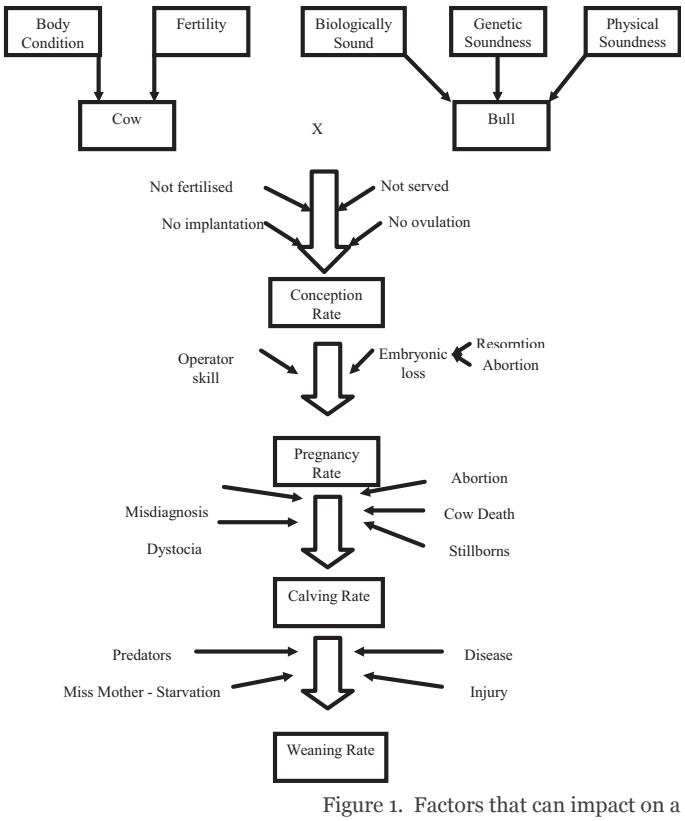

Figure 1. Factors that can impact on a breeding herd to give a suboptimal weaning performance

Table 1. Affect of body condition score on weaning rate and weaner performance

Body Condition Score Category				
	3	4	5	6
Pregnancy Rate	51%	76%	92%	100%
Average Calf Weaning Weight (kg)**	200	210	229	233
Average Calf Daily Gain (kg/day)**	0.85	0.88	0.87	0.91

*** Data has been converted to kg.*

Every herd has some thin cows. The best way to manage a thin cow problem is to prevent it through proper nutrition and parasite control. It is also important to have some diagnostic work performed to ensure debilitating diseases, eg. BVD or Johne's Disease, are not present in the herd.

The target is to have cows calving at a BCS of 5.5. One management procedure is to pregnancy test the herd 3 months before the onset of calving, remove empties and feed the thin cows an appropriate supplement to improve their BCS to 5.5. Three months will be adequate time for this.

Bulls are also important in maximizing pregnancy. The bull must be physically sound and capable of serving cows, must be fertile enough to fertilise these cows, and must not be carrying infections that may prevent fertilisation or cause infertility problems in the cows.

There are a number of genetic defects that can cause mortality in newborn calves. Bulls can be screened for some of these defects.

To ensure that maximum performance is achieved from the bulls, they should be examined and tested if necessary prior to the breeding season each year. Unsuitable bulls should be culled.

Infectious diseases

There are a number of infectious diseases, which upon entry to a herd can cause dramatic reduction in reproductive performance. Once endemic in a herd, suboptimal performance continues. Calving rates as low as 50% can occur. The main problem diseases are:

- Brucellosis – Australia has national freedom.
- Campylobacteriosis (C.fetus. venerealis)
- Trichomoniasis (T.fetus)
- Leptospirosis
- Pestivirus
- Akabane disease
- Ephemeral Fever

Pre-service testing and vaccination are good strategies that can be put in place to eliminate these diseases as causes of reproductive failure.

Vaccines are available for Campylobacteriosis, Leptospirosis and Ephemeral Fever (Three-Day Sickness). A Pestivirus vaccine will be available soon. It is important to work up a suitable testing and vaccination program with your veterinarian to maximize reproductive performance.

Pregnancy testing is an excellent tool that should be used as a part of reproductive management of any herd. A skilful operator who has accuracy rate of over 95% is required. Real time ultrasound techniques are being perfected and in time will become the preferred method of early pregnancy testing.

Testing at 2-3 months after bull removal and again at 2-3 months prior to commencement of calving will allow for management decisions to be made on culling and nutritional requirements.

A good pregnancy-testing program builds up a database of information on individual cows and bulls, paddock performance and can highlight problems of conception failure, pregnancy loss or perinatal loss.

Deaths can be a significant loss to production. Some deaths will inevitably occur. On the other hand, deaths due to Botulism, Clostridial disease, dystocia and genetic disease can be avoided through vaccination, management and testing programs.

Loss post-calving to weaning can occur due to predators, disease, injury and inadequate nutrition.

Recent surveys in North Queensland and the Northern Territory have shown significant internal parasite burdens to be present in weaner cattle. These surveys challenge the long held beliefs that extensive production systems have insignificant parasite problems due to climate and low stocking rates. Parasite investigation surveys and parasite control strategies should become part of the property management program.

Cattle consigned to the live export market or eastern feedlots are confronted with a variety of different challenges and experiences. There is little difference in the experiences that cattle destined for the export trade or feedlot finishing are exposed to. They are mustered, transported long distances, processed and mixed with stock from different origins and exposed to stressors and infectious agents not previously encountered. The way in which they handle these challenges will have a big bearing on how they perform.

There are a number of farm management techniques that will help these animals adapt quickly to feedlot or boat life.

An understanding of the major health issues encountered by cattle in feedlots will enable the development of management strategies for the preparation of feeder steers.

Maximising calves weaned/ cow/year

Cattle consigned to feedlots are confronted with a variety of different challenges and experiences. They are transported, inducted, mixed with stock from different origins and exposed to stressors and infectious agents they have not previously encountered. The way in which they handle these challenges will have a big bearing on how they perform. There are a number of management techniques that will help animals in the feedlot adapt quickly to the environment once they enter the feedlot. An understanding of the major health issues encountered by cattle in feedlots will enable the development of management strategies for the preparation of feeder steers.

Sending cattle to feedlots

The main health problems can be subdivided into three main groups:

1. Bovine Respiratory Disease (BRD):

   This is the major cause of sickness in feedlots. Normally 5 to 10% of cattle entering feedlots are treated for BRD problems. BRD is caused by viral infections (IBR, P13 and BRSV) and bacterial infections like P.haemolytica and H.somnus. Often mixed bacterial and viral infections occur.

   BRD can affect up to 30% of animals in individual lots and cause death loss of up to 10 times the normal rate.

2. Gastro-Intestinal Disease:

   This includes animals that don't eat, poor doers and nutritional problems like bloat, alkalosis and acidosis. The non-eaters and poor doers normally make up only 0.5 to 1.2% of cattle. Bloat and acidosis cases are mainly the result of feed management problems. The role between non-eating and alkalosis (high pH) is becoming more established. Alkalosis (dead belly) has now been shown to be a significant problem in slow starting and poor adapting cattle.

3. Lameness:

   These problems include infectious foot conditions like abscesses and footrot and non-infectious conditions often due to traumatic injuries. In some mobs, up to 20% of animals are treated for foot problems. Not many deaths are experienced, but some animals do not recover and are culled. The main losses from lameness are due to poor performance and out of specification animals at market. Injury type lameness can be contributed by loading and unloading, standing on concrete saleyard pens for long periods and the

general movement and knocking around that can happen at saleyards and in transit. Other more subtle problems (Mycoplasma and Chlamydia) can also cause lameness problems.

4. Pregnancy:

   The severity of health problems varies greatly between feedlots and also at different times of the year. Production losses are due to death loss, treatment cost, labour costs, reduced performance and extended feeding times which may be due to withholding period compliance or in an attempt to ensure cattle fit into market specification.

Reasons for health problems

There are two main issues involved in why cattle have health problems. Firstly the immune status of the animals - this determines how well they cope with disease challenges during the feeding period. Secondly, the level of stress (physical, physiological and psychological), which the animals need to endure. High levels of stress can severely compromise the immune system of animals and is the single most important factor in determining whether animals get sick or not.

Factors contributing to health problems

1. Cattle age. Younger cattle generally have more health problems than older cattle. Very young calves and unweaned calves suffer more stress and have more problems. Younger animals have a less well-developed immune system and therefore are at greater risk of having health problems.

2. Source/origin. Saleyard cattle have the most health problems. The nature of saleyards is that they attract cattle from many different sources with a wide variety of different pathogens and some cattle from herds, which have had very little contact with infectious agents. Cattle from naïve herds can suffer severely due to a low level of immunity when they arrive at a feedlot. These cattle are exposed to a range of pathogens which they have never been exposed to before.

3. Breed. Some breeds have better resistance than others and seem to cope better with stressful situations.

4. Management prior to arrival. Quiet cattle are easy to handle and settle down quickly. Cattle that have been yard weaned have much lower sickness levels than paddock-weaned cattle. Properly weaned cattle adapt to the feedlot much better than unweaned calves.

   Other management techniques such as correct and complete vaccination, castration, speying, dehorning and pregnancy testing should be done prior to arrival. Adequate recovery time must be given to the animals before entry into the feedlot.

5. Shrinkage. From a health perspective, stock that lose too much weight during transport perform badly when they arrive at feedlots. Dehydration of over 5% is serious and some animals can lose up to 22% of body weight. This, combined with time off feed, creates serious problems.

6. Time off feed. Animals that are kept off feed during sale and transit can be badly affected. Animals with an empty gut lose populations of rumen bacteria and protozoa, which are essential for digestion. The rumen fermentation process can stop altogether with extended time off feed. Animals arriving with “dead bellies” take time to return to normal even after they commence eating. This process is aggravated by saleyard curfews. It takes up to 3 weeks for the rumen population to be fully re-established.

7. Time in transit. Long trips can knock cattle around. The longer the time from mustering to arrival at the feedlot, the longer the time off feed and the more severe the subsequent problems are likely to be. Just standing

on truck floors for extended periods can cause lameness and injury. One of the most important factors to consider is the total time in transit when trying to perform a risk assessment on a group of cattle. Exhaustion, transit tetany, dehydration and lameness are the main problems that have been experienced in new arrival cattle transported east from central Australia.

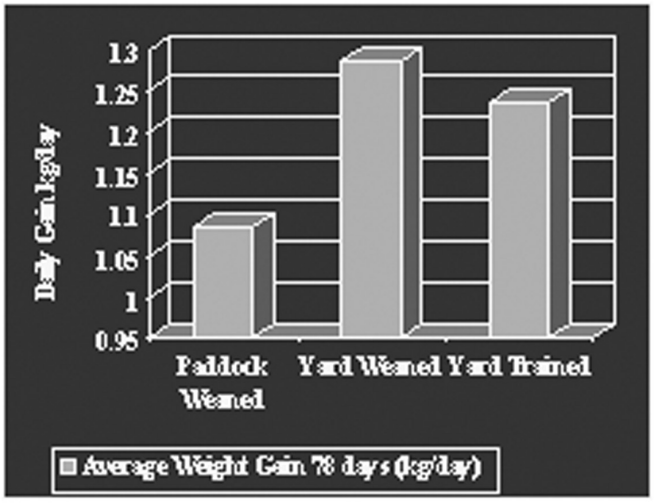

Figure 2. Feedlot daily gain

Strategies to reduce health risk

1. Know the specifications required for the animals to be consigned and make sure the consignment meets those specifications. These include age, individual animal weight, frame score, hip height and condition score. Sending cattle that meet the specifications ensures they have every opportunity to compete with their pen mates. It also maximizes the opportunity for a high level of compliance to the intended market once the animals have completed their feeding period.

   The objective of feeder cattle is to have cattle without an excess of body fat, have a good frame score and good weight for age. These are the cattle that are most profitable to feed on.

2. Yard wean calves. Keep them locked in secure, safe yards for 5 to 10 days. Give them access to clean water troughs with a yard stocking rate of no less than 4m²/head. Teach them to eat hay or silage in troughs or bunks and daily feeding of some total mixed ration is useful. They should all be eating freely before they are let out. Daily human contact is important. Walk through the yards, talk to them and even walking them through the race and crush is useful in helping to quieten them down.

3. Management practices. Ensure all steers are fully castrated before consignment. Dehorn horned calves early and well before sale. Ensure dehorning and tipping wounds have completely healed before shipping. Pregnancy test heifers before consignment and remove pregnant females. Vaccinate all calves with 5 in 1 or 7 in 1 vaccine ensuring the animals receive two doses of vaccine 4 to 6 weeks apart.

   Vaccinating for Botulism in weaners may be important especially if a problem is present and weaners are maintained on the property post-weaning.

   A commercial IBR intranasal vaccine (Rhinogard) is now available. (Contact your feedlot veterinarian with respect to the use of this product) Vaccines for Pasteurella haemolytica and BVD will also be available in time. Vaccination for these major respiratory diseases 3 to 4 weeks prior to entry to the feedlot will drastically reduce losses experienced from BRD. Respiratory losses and health costs will be substantially reduced and improved weight gains and improved feed efficiency will also occur. This for a modest outlay. The use of these respiratory vaccines in central Australia is unlikely to become common practice unless arrangements with the specific feedlotter or exporter are made.

   Ensure a parasite management program is in place for internal and external parasites. Remember cattle cannot become infested with internal parasites in a feedlot, due to the fact that life cycles cannot be completed. However, pre-existing parasite burdens can severely affect performance, especially in domestic feeding programs.

4. HGPs. Most feedlots use Hormonal Growth Promotants (HGPs) in their management program. Many are happy to buy cattle that have been

Figures 2 & 3 are the results of work by L Fell, NSW Agriculture, Armidale. They report the effects of weaning management on feedlot gain and of sickness level (mainly BRD) in calves run in commercial feedlots over three years.

Yard weaning at high density resulted in significant increases in performance compared to traditionally weaned calves.

Best results were achieved by combining yard weaning and pre-feedlot vaccination for BRD. Vaccinated, yard weaned calves settled onto feed faster, grew faster and in one year, grew 60% faster in the first month on feed.

Yard weaning and correct vaccination will maximise the chance of calves performing well when fed.

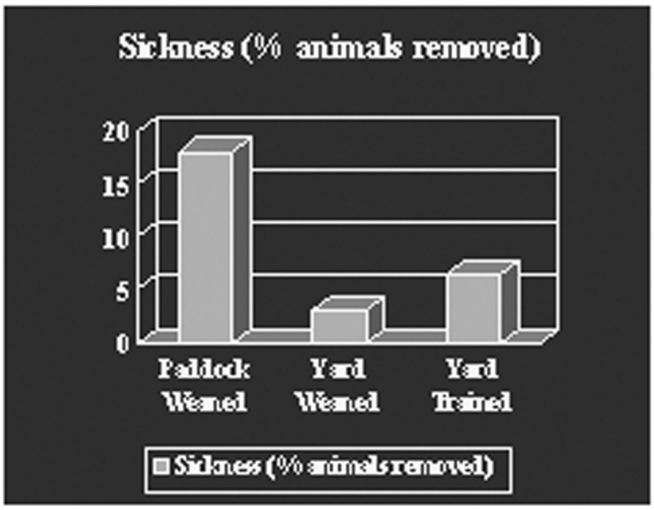

Figure 3. Sickness level

implanted previously and where this is the case you get the benefit of the HGP while meeting feeder weights. Using HGPs on feeder cattle can limit your market options. Some feedlots do not use HGPs and will not buy cattle that have been treated. Check the approach taken by your likely buyers before using any HGPs. The EU market is closed to all HGP treated animals.

5. Cattle Selection. A feedlot consignment should not be seen as an opportunity to get rid of a heap of culls by mixing them in the mob. Only send those that meet the specifications for weight, age, frame score, hip height and body condition score. Don't send bad temperament cattle and keep out the ones with structural problems. In cattle fed for more than 120 days, animals with poor structural soundness will struggle to perform. Your cattle will be used to assess your worth for future consignments. Sending unsuitable cattle can affect cattle performance and your reputation as a supplier.

Growing or backgrounding cattle

Growers and backgrounders have special challenges with cattle that are purchased from different sources and put together into a consignment. Different lots need to be sorted into suitable lines based on specifications. They should receive a standard health program that includes drenching, fluke treatment where necessary and vaccination for both 5 in 1 and BRD. IBR and P.haemolytica vaccine is available now and BVD vaccine will eventually become available.

All cattle should be trained to eat and drink from troughs. Different consignments should be mixed to allow cattle to sort out their social order and to ensure exposure to the pathogens they carry. Mobs should not be remixed within 4 to 6 weeks of dispatch.

Nutrition during the growing phase is critical to subsequent feedlot performance. Cattle that are to be long fed for high quality marbled markets are best kept growing at a minimum of 0.6 to 0.7kg/day. Cattle to be short fed can afford a period of growth check, as they will compensate when nutrition improves or when placed on feed. Marbling performance is reduced for long fed cattle if any growth check is severe or prolonged. To keep cattle growth constant, avoid sudden changes in feed quality and diet when moving paddocks. Don't graze pastures too low as this reduces intake for the period before changing paddocks. Rotations are good for growing steers if they are not forced to graze too low and the new paddocks are similar in feed quality to the one they are leaving.

Transport to feedlot

Cattle off feed and water for longer than 12 hours or more have an increased risk of rumen shut down. The curfew involved at saleyards is one reason why most feedlots prefer to buy direct from farm. Since payment is often based on live weight measured at the feedlot on delivery, minimizing shrink is important. Work out transport plans with the trucking company and the driver. Minimize the time cattle are held in stockyards and avoid travel delays en route as much as possible.

Before transport, cattle should be yarded and provided with water and good quality hay. Filling up on dry feed will mean less moist dung in the truck and feed that lasts longer in their system. Loading and unloading as little as possible reduces leg and foot injuries. Short haul cattle are less prone to problems but the feeding and pre-transport care is still very important.

Cattle travelling from central Australia to markets (boat, feedlot or southern sales) have huge distances to travel. This may be done by truck, truck plus train or train. Even if the best management practices have occurred at weaning, all the good work can be undone at this final hurdle.

The most important factors are time and stress. This is the time from commencement of muster to arrival at destination.

Cattle are subjected to handling, heat stress, feed and water deprivation, dehydration and long periods of standing with truck movements.

Our experience has shown that cattle trucked east which have had time to fill and rehydrate prior to being trucked and are then trucked on bedding (rice hulls or saw dust) arrive in good condition with minimal tiredness and lameness.

Summary and conclusion

Cattle bred in central Australia have three main market destinations:

- Live export
- Eastern feedlots
- Grass fed bullocks.

The first objective of a production system is to maximize the number of weaners produced/cow/year and secondly to get these cattle to their final destination with minimal health problems.

The factors that affect weaning rate were discussed.

Both cow and bull factors were considered. The impact of nutrition, infectious diseases and management were discussed as causes of poor weaner production rates.

Live export and feedlot cattle have a variety of stressors and infectious agents they have to cope with. Respiratory disease, gastro-intestinal disease, lameness and pregnancy are the main problems encountered. Inadequate immune system and high levels of stress are the main reasons for animals getting sick in these production systems.

The factors that contribute to health problems were discussed with time off feed and time in transit being of crucial importance. To minimize health issues and to maximize returns, it is important to know the market specifications for the intended market.

The concept of yard weaning was discussed. Yard weaning has shown to be the single most beneficial management tool that can be used to improve feedlot health. Other management techniques were also considered. Backgrounding is a further extension of yard weaning and is a very useful tool for preparing cattle from both a health and specification perspective.

The effects of transporting cattle long distances were discussed. Time from mustering to arrival at destination is the crucial factor. Methods to reduce dehydration, metabolic imbalances and lameness were discussed. Some experiments have been done using bedding (saw dust, rice hulls) in trucks. These cattle have arrived in good order with very little soreness and lameness.

References

Wilkse, SE et al. (2002) Economic Impact of Thin Cows in Beef Herds. *Proceedings of the Australian Association of Cattle Veterinarians*, Adelaide SA.