Agnote

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Basic Guidelines for a Feedlot Operation

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Feed-lotting involves the provision of an artificial environment in which cattle are placed in a confined area to consume a predetermined diet. An increase in profit results from better growth of the animal and an improved carcase relative to the cost of the extra feed and other inputs. Invariably marginal returns make it necessary to use feedlots.

MARKETS AND PRODUCT DESCRIPTION

Prior to embarking on costly feed-lotting of cattle, one must determine where market outlets are and the type of carcase they require

DOMESTIC MARKET

Historically domestic consumers preferred a "big steak and plenty of fat". Consumer demand has changed to “a piece of steak that fits on a dinner plate with 3 to 5 mm of fat cover”. Carcase demand has changed from heavy and very fat to lighter and lightly finished. A dressing percentage of 50-55% is ideal.

EXPORT MARKETS

Foreign markets such as Japan prefer heavier carcases with more subcutaneous (beneath the hide) fat and intramuscular fat (marbling). This type of animal may be later maturing and requires a relatively longer period in the feedlot than the animal for domestic trade. Having determined the market needs and the duration of feeding needed, it is possible to prepare a budget for the operation.

LOCATION AND PLANNING FEEDLOTS

The drier the climate, the less important is the location of the feedlot in relation to drainage. However, it is good practice to have the area well drained to maintain the yards as dry as possible. Water running into the yards from outside should be minimal and if necessary methods should be considered for removal of manure build-up and/or draining wet areas in the yard. A slope of 2% – 4%, with the feed trough at the higher end of the pen, is suitable for proper drainage.

The supply of adequate clean water at all times is essential. Where possible, exposure of animals to strong winds (cold or hot) is best avoided. Wind protection can be achieved through tree windbreaks or even by storing hay in strategic areas. Shade is essential in hot climates as high temperatures can be fatal for cattle and will also affect their feed intake. Recommended shading should be 3-4 m high, have an area of 2.8 m^2/head and run east to west.

As a guideline for yard space/stocking rate, a minimum requirement is 9 m²/head for cattle with no horns and 15 m²/head for cattle with horns. The wetter the climate, the greater the yard space required. When self-feeders are used, a width of 75-100 mm/head is suggested. When open troughs are used there is need for a greater feeding space. Similar areas should be provided for water troughs.

Minimum requirements for trough space:

Yearlings	250-300 mm/head
15 months to two years old	300-380 mm/head
Bullocks	380-460 mm/head

Unloading and loading facilities, a forcing yard, race and crush with head bail and weighing scales are essential. These can be situated at the end of a laneway proceeding past the gateway to each holding yard. An area close to these handling facilities will also be needed as a hospital pen to allow for the isolation and treatment of ill stock.

TYPES OF ANIMALS TO FEED

Having decided on the markets and the eventual marketable products, one can try to relate this to the most readily available (feeder or store type) animals and their price. Assuming the aim is to feed animals for 100 days, for an average gain of 1.5 kg/head/day, a 250 kg animal will finish at approximately 400 kg. Lighter animals and later maturing animals will deposit more muscle before entering their fattening/finishing phase. Larger mature size breeds e.g. Santa Gertrudis, later maturing Herefords and Shorthorns and European breeds and their crosses are typically late maturing. At the same live-weight, heifers will carry more subcutaneous fat than their steer relatives.

As the body condition of the animal improves from a backward to forward store category, its price increases correspondingly. The fatter animal will require a less energy rich diet in the feedlot. The later the maturity phase, the more is the need for energy from the feed and the less the need for costly protein. Also the period to finishing will be shorter, resulting in a quicker turnover time.

All animals should be healthy, free of leg and hoof problems and preferably adapted to the local climate.

INDUCTION INTO THE FEEDLOT

When animals arrive at the yard, they should be inspected. Unthrifty, sick or infected animals should be removed. All animals should be treated for internal and external parasites. If market access is not affected, a growth promotant may be placed in the ear as directed by the manufacturer. Under legislation, cattle from other properties than that feedlot should be branded prior to movement. However, if cattle are used from the same property, they should be branded prior to commencement of feeding rather than afterwards.

If the animals have tail tags, they should be removed at that time. If animals have radio frequency identification devices (RFIDs) they should not be removed. Ear tagging or fitting of an RFID for individual animal identification may be a market requirement but is not essential in the Northern Territory.

Horned cattle should be tipped (4 cm - 5 cm), but dehorning will decrease growth rate and increase the risk of infection. Horned animals of uniform size and age should be kept as one group. Polled, dehorned and scurred animals should be kept in another group. Carcases of horned animals will have more bruising than carcases of animals without horns.

Most animals in feedlots are routinely vaccinated with a 5-in 1 clostridial vaccine to protect against black disease, blackleg, tetanus, enterotoxaemia and malignant oedema.

Cattle should be fed hay on arrival at the yards and allowed access to water to minimise the stress of transport and the new surroundings.

Weighing and other operations can be readily done on arrival. Weighing provides valuable information on growth rates and feed conversion efficiency.

CHANGES IN FEED REQUIREMENTS

As indicated earlier, the lighter the animal is when entering the feedlot, the higher its protein requirement. Calves entering a feedlot require up to 14% crude protein for the first 90 days and 10-10.5% crude protein from 90 days to market. Associated with the decrease in need for protein, there is a corresponding increase in need for energy from the diet.

Not only do the animals' nutritional requirements change as they progress through the various muscle/fat maturity phases, their body weight and hence their intake increases. Therefore, animals of uniform body weight and size should be kept together.

Cattle generally consume 2.5 to 2.7% per day of their body weight during the feeding program. However, this can vary from 2.2% to up to 3.2% of body weight over the total period in the feedlot. Cattle eat more as a percentage of their body weight early in the feeding period and less towards the end as they fatten.

Many feedlots operate on diets consisting of more than 80% grain. Cattle must be slowly introduced onto such diets to enable changes in rumen microbes and chemical composition of intestinal contents. A suggested progression of feeding grain is shown in Table 1.

Table 1. Introducing grain to Cattle

Days	1 - 2	3 - 4	5 - 6	7 - 8	9 - 10	11 - 12	13 - 14	15 - 16	17 - 18
Hay %	70	65	60	55	50	45	40	35	30
Grain + Premix %	30	35	40	45	50	55	60	65	70

Initially animals need ready access to hay. This is particularly important if they have been on a decreasing plane of nutrition e.g. during drought. They should have a full rumen and not be hungry when the high-energy grain diet is introduced. Problems such as lactic acidosis can occur if animals consume large quantities of grain without being adapted to it.

Most feedlots feed a premix with the ration which includes a rumen modifier such as Rumensin® or Lasolacid®, which alter rumen bacteria populations so that feed is utilised more efficiently.

FEEDING SYSTEMS

Animals can be fed twice daily either via open troughs or by self-feeders. In the early stages of adaptation to the diet, the use of open troughs to introduce the grain is advantageous. Free access to hay must be provided, using a hayrack for baled hay or a restrictive frame around circular bales.

As the animals consume larger quantities of grain daily, self-feeders offer several advantages. They minimise the daily labour needed at the yards and provide increased on-property grain storage. They do not allow a day by day assessment of grain intake by the cattle, but an average daily intake can be readily calculated.

Whatever the feeding system, it is important that rapid changes to the established diet do not occur. Should supply of a particular grain become restricted, the replacement grain should be introduced gradually. For this reason, a supply of grain plus premix on the property is essential. Fresh supplies should be received before current stocks are depleted. This however, ties up some working capital during the operation.

If grain is fed daily in troughs, then the quantity fed should only slightly exceed the anticipated consumption rate of the cattle each day. This protects the feed from becoming foul or from going sour after exposure to moisture. If the feed does become spoiled it must be removed from the feed troughs.

AVOIDING DISEASE

All animals must be checked daily when they are standing and moving around. The best way to do this is by walking or riding through the pen of cattle. Young cattle and recent additions to the feedlot should be checked twice a day.

Any animals showing persisting signs of stress or illness should be separated. This will minimise the spread of infection and bullying by others. Acidosis or grain engorgement poisoning is possibly the most common condition affecting feedlot cattle. This can be avoided by introducing the cattle slowly to the grain diet and by incorporating buffers into the diet, at the rate of 1% of the total ration, to stabilise rumen pH. Bentonite or limestone can be used, but bicarbonate of soda is most effective.

Other conditions such as bloat are associated with high grain diets. Urea poisoning also can occur if urea forms part of a poorly mixed ration. Diseases such as infectious bovine rhinotracheitis (IBR), laminitis, polioencephalomalacia, footrot, gastric ulcers, and liver ulcers/damage have also been recorded.

Calculation of feedlot economics should include a death rate of at least 1% to cover animal intolerance to feed and the above diseases.

KNOWING THE PRODUCT

For optimum returns, a sound knowledge is needed of the market requirements for particular types of carcasses and how they relate to the live animal. This requires an understanding of the animal's stages of maturity and the relative fat depths over the eye muscle and rump, in association with actual live weights. Accurate identification of the live animal for particular market requirements is extremely important.

The amount of fat being carried by live cattle can be assessed by the depth and width of the brisket and the fullness of the flanks and in the twist (between the back legs as seen from the rear). Other sites like the tail head are also indicators of the fatness of the animal. Relating the fatness of the animal to the amount of cover over the eye muscle and ribs can help to assess actual fat depths. Ultrasound scans are possible for accurate determination of fat depth.

Cattle that are under-finished will be penalised in sale price. Cattle that are too fat will suffer a price per kg penalty, in addition to the cost incurred from the extra feed consumed.

MARKETING THE PRODUCT

Maximum returns are obtained by selling according to the best price for a particular market. Thus the selling date may be earlier or later than initially intended. Forward selling contracts reduce market price risk.

If cattle are moving to either a Northern Territory abattoir or saleyard they must have a transaction tag (either an ear or tail tag). Large lots of cattle heading direct to an abattoir are exempt in the Northern Territory. Cattle heading out of the Northern Territory will need to comply with identification requirements for each state.

Cattle should not be transported hungry and thirsty as they will become restless, subject to stress and bruise more, so meat quality deteriorates. Access to water and at least reasonable quality hay, will help to maintain a full appearance during sale and minimise stress. Transport during the coolest period of the day will reduce heat stress and fatigue.

Whilst emphasis on transportation strategies may seem to be obvious, one must not overlook the need for ready access to road transport vans, trucking under good road and weather conditions and dispatch when industrial trouble at sale yards and abattoirs are minimal.

SUMMARY

Margins for feedlot operators are minimal. Any adverse management decisions during the feedlot operation are likely to be costly and result in a negative return for the investment. Feed is the major cost in feedlot operations. Hence feedlots tend to be sited close to ready supplies of grain. The initial cost of the store or feeder animal is usually the next largest expense followed by costs of selling, transport, capital improvements and labour.

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FOR FURTHER READING

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