Lecture 05: Pen Fattening Theory and Practice

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Fun Fact…

There are approximately 250 breeds of cattle recognized throughout the world, and several hundreds of breeds that are not recognized. The exact count is impossible to determine because other breeds continue to be imported, and crossing existing breeds continuously creates new breeds (Noor, 2014; Lewis et al. 2022)

Definition

Feedlotting (also called pen fattening) involves the feeding of beef cattle with a protein balanced, high-energy diet for a period of 70 to 120 days under confinement to increase live weights and improve degree of finish and thus obtain better grades at the abattoir (Hayek and Garrett, 2018; Greenwood, 2021; Mansilla et al., 2022).

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The Principle of Pen Fattening

- A beef carcass comprises muscle, fat and bone. At birth, there is very little fat in a carcass and initial development is mainly bone and muscle growth. As the animal matures and gains mass, a stage is reached when fat deposition accelerates. Once an acceptable live mass and level of carcass fat is reached, as decided by market demand, an animal is said to be finished and can be slaughtered.
- Feeding energy is the pacesetter for meat production and performance in the feedlot exercise. Energy consumed in excess of maintenance requirements is used for muscle tissue synthesis, and the efficiency of energy use above maintenance remains constant. Hence the greater the energy intake by an animal above maintenance the smaller the maintenance cost per unit of gain and the cheaper the gain becomes. Feed efficiency will only be greater if cattle are fed adlib tum metabolizable energy-dense and protein-balanced rations of high digestibility.

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Alternative Ways to Finish Cattle

Feeding cattle in order to obtain the right amount of fat on and in the muscle, and a higher carcass mass, can be done in many ways. The most common practices include:

(a) Finishing off the Veld

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- Usually, steers have to remain on the veld until they are at least two years old before a suitable carcass fat content and live mass is reached.
- Cows are frequently fattened on good summer. Animals are usually sold in late summer before they start losing body condition and weight.

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(b) Finishing off planted pastures

i. Planted pastures can be used for fattening and growing out animals and the growth rates achieved are better than on veld. For instance, weaners (7-9 months) go on to annual ryegrass pasture at weaning in autumn and are ready for market by Christmas (Gororo, 2015).

ii. Summer pastures such as kikuyu can also be used, but bear in mind that this practice is often not economic because feeding starts in spring when the price of feeders is relatively high and finished animals are only ready in autumn, when beef prices are relatively low.

(c) Finishing in pens

Animals are kept in pens or small paddocks and fed on high grain diets over 90-150 days before they are taken for slaughter. This is the preferred route by abattoirs.

- ❖ On-farm feedlots - animals are fattened in pens or large paddocks, using boughtin or home-grown feeds. The animals for fattening can be home produced (breeding and growing out operations) or purchased (buying-in and growing out operations).
- ❖ Commercial feedlots - are run mostly on the abattoir and other large scale farms. The feedlotter, often a speculator, buys animals for the feedlot. Ownership of the animal, and therefore the risk associated with feeding, are the responsibility of the feedlot owner.
- ❖ Custom feedlots - here the feedlot operator does not buy animals, but the owner of the animal sends them to be fattened at a fee. In this case, risk usually remains with the owner of the animal.

Why do Pen Fattening?

- To add extra weight to stock at a younger age and thus increase turnover and maximize output from the beef enterprise.
- To improve the degree of fatness and fleshiness (finish) of the carcass in order to achieve higher grades and better prices.
- To take advantage of seasonal price fluctuations. Prices are usually higher from October to February. The feedlot manager is usually a speculator.
- To even out beef supply on the market in line with government policy.

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Profitability in a Feedlot: Key Considerations

- It is very ease to make a loss from a pen fattening exercise. Factors affecting profit margins in a feedlot operation include:

i. Buying price of feeders.
ii. Cost of feed
iii. feed conversion efficiency (FCE) in pens
iv. Carcass price

Other costs

i. Agents commission
ii. Slaughtering costs.
iii. Carcass condemnation.
iv. Interest on capital.
v. Wages and salaries.
vi. Transport costs.
vii. Machinery costs.
viii. Mortalities and veterinary costs (disease control, medicines, vaccinations, veterinarian).
ix. Pre-treatment costs (growth stimulants, dipping, dosing, vaccination).

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Main Profitability Determinants

Important margins contributing to profitability include the:

i. price margin and

ii. feed margin.

By far these two have the greatest effect on feedlot profitability.

Price Margin

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Price margin includes the difference between purchase/cost price and selling price resulting from beef price fluctuations as well as improvement in carcass quality due to feeding. The price margin and is calculated as follows:

Price Margin = Initial live mass X (sale price/kg - cost price/kg)

The feedlotter cannot control price fluctuations and must therefore rely on a reliable prediction (speculation) of what prices will be when stock are sold at a future date. Although profits are potentially high, risk is high and people lacking experience often lose money with speculation. When buying livestock, most feedlotters make use of the price per kg live mass for their calculations, but they also must know the dressing percentage they expect after finish.

Feed Margin

The profit or loss a feedlotter makes as a result of live mass gain in relation to cost of feed consumed, is called the feed margin and is calculated as follows:

Feed margin = Live mass gain X (sale price/kg - cost/kg gained)

A feedlotter can influence feed margin by ensuring, through good management, that high feed conversion efficiency and optimal growth rates are achieved and by taking steps to obtain the best feed at the most economic price.

Beef: Maize Price Ratio

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- The price paid for feedlot cattle or their initial value (cost/kg), is a critical factor affecting the profitability of a feedlot enterprise, especially when a small or negative feed margin exists.
- A positive feed margin can only be realized with high mass gains and a relatively low cost of feed. The cost of the feedlot ration relative to the beef price and live mass gain thus exerts a major influence on the cost of gain.
- Because of the high proportion of energy required to ensure good feedlot performance, the cost of carbohydrate, which is usually included in most feedlot rations in the form of maize, snap corn, hominy chop or sorghum, in relation to the beef price, is a significant factor deciding profitability of a feedlot enterprise. This is usually expressed by the ratio beef: maize price, which experience has shown must be more than 13:1 for feedlot ting to be profitable. Feedlotters can make substantial profits when the beef to feed cost price ratio is favorable. Generally, average daily gain declines toward the end of the feeding period, where animals are fed for too long a period of time (are over-finished), resulting in a negative feed margin and consequently reduced profit margins.

Feedlot Profit Margin

- The feedlot profit margin is a function of price margin, feed margin and other expenses. Adding these three together, indicates profit or loss for the period of time over which the calculation is made.
- Feedlot managers need to keep a close watch on feedlot profit, which is a very sensitive measure of the efficiency of management.

Feedlot Management

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- Management has a major influence on the profitability of a feedlot enterprise. Management aspects that are important include:

i. The Animal
ii. The Diet
iii. Daily Management
iv. Activities prior and during penning
v. Health management

References

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Filling the Feedlot

- To keep a feedlot enterprise running, a continuous income is needed. The only way this can be achieved is by having livestock to sell all the time. This is a difficult part of feedlotting, because animals remain in a feedlot for 90 to 120 days. The feedlotter must therefore predict market demand, and consequently predict selling price at least three months ahead. A continuous source of feeders is needed, but may not always be available.

- Livestock can be obtained directly from farmers or be bought by private treaty through an agent or at livestock auctions. Where a buy-in feedlot system is used, buyers must be experienced in evaluating the potential for fattening of different types of animal (maturity type, age, sex) in relation to the market demand (price) of different grades of carcass. Funds to buy in animals must be available at all times. A lack of funds to buy in animals when prices are favourable could lose an opportunity to make a profit.

Size of Feedlot

- There is not an optimal size for a feedlot.
- Even a farmer feeding a single animal can make a profit.
- On the other hand, in the case of a large enterprise where its sole source of income is the feedlot, the feedlot must be large enough to pay for running costs such as salaries, transport, and cost of equipment and so on.

Design and Layout

- Basically, the design and layout of the feedlot depends on permanency, size of operation, method of feeding and feed supply. It must be sited close to feed stores, handling facilities and water supplies.
- The feedlotter must also consider drainage by siting on a 2% slope or on rocky ground and where there are windbreaks. A roof is not usually necessary, except over the feed troughs to prevent wetting of the feed in rainy weather and bleaching and loss of vitamins in hot sunny weather.

Space Allocations

- A floor space allocation of 9-14m2 /head is ideal depending on size and breed. However, for large groups of animals one can go down to a stocking density of 7.5m2 /head.
- Feeding space allocation should be 30-50cm/head depending on whether the animals are poled or horned. Feed must be offered free choice and at least 50l/head of drinking water must be available. A water reserve that carries 2-3days supply must be installed in case of pump or borehole failure. Water troughs must be easy to clean, have a drain plug and sited far away from the feed to prevent fouling of the water. It can be economic to have several pens drinking from the same water trough.

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