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Feedlots for beef in W.A. : some guiding principles

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FEEDLOTS FOR BEEF IN W.A.—
SOME GUIDING PRINCIPLES

FEEDLOTS are small enclosures where all of the animal's feed is supplied from an outside source. Compared with grazing, feedlotting is an expensive method of beef production.

Profitability of a feedlot depends largely on the difference between the purchase and sale price of the animals, and on the cost of feeding.

Beef prices

In the past years there has been a sale price advantage for "baby beef" under 15 months old and under about 420 lb carcass weight, but this may not continue if more of these animals are produced.

Baby beef prices of 29 to 35 cents per pound from May to August have been 6 to 10 cents higher than December to February, when most of the pasture-fed animals are sold. This difference could be much smaller if more feedlot cattle are produced. Winter beef prices could become lower and the cost of weaners higher.

Skill and experience are needed to make the time at which animals reach suitable condition coincide with the time of highest prices. Over-fat animals make inefficient use of feed, while un-finished animals are likely to realise lower prices than anticipated.

At the moment, the seasonal price variation contributes to the profitability of a summer-autumn feedlot. If there is no difference between the price per pound of carcass before feeding and after feeding, the profit (or loss) of the feedlot is composed entirely of the difference between the cost of feeding, transport, commission, interest, etc., and the value of the extra beef produced.

Growth rates

Slower growing types of animals will cost more per pound to produce than faster growing types because they convert a lower proportion of their feed intake to body weight. Animals in store condition when

*Beef Research Officer, Animal Husbandry Section, Animal Division.
Cattle in good store condition at the start of feeding in a farm feedlot at Williams. These animals started with a liveweight of 435lb. and finished at 640lb. after feeding on a ration of hay and grain for 125 days. They ate about 16lb per head per day.

feeding starts, provided they are healthy, will grow faster, lay down a lower proportion of fat and thus give better conversion of feed into carcass weight, than animals which start off in very good condition.

The cattle eat about $2\frac{1}{2}$ lb of dry food per head per day per 100 lb liveweight. Faster growing types may eat more.

Little liveweight gain can be expected over the first month of feeding if animals are weighed full at the start and grain-based rations are used, because the gut contents are reduced but carcass weight is increased.

From then until suitable slaughter condition is reached, the average gain should be at least 2 lb per day, and the carcass gain rate about 1 lb per day. Good quality feeds should give liveweight conversion ratios of about 8:1, and carcass weight conversion ratios of about 14:1, from weaning to finish, in cattle of about a year old.

EQUIPMENT

Fencing

A secure enclosure is essential. A suitable type is six-line ringlock with two strands of barbed wire to a total height of about 4 ft 6 in., with posts 10 ft apart. The site should be shaded, preferably well drained and provide at least 100 square feet per animal. A rocky ridge is a very suitable spot to choose, and the feed lot should be situated near the cattle yards and feed stores.

There should be one robust, easily cleaned watering point for every 50 head in the enclosure. Baby bees require about 6 gallons of fresh water per day and older steers up to 10 gallons per day.

Some form of hard standing will probably be necessary at the troughs and water points, especially on clay and loam soils, as the feeding period may last until after the opening rains.

Feed containers

Feed containers—troughs or self feeders—should hold at least three days' supply of feed. Trough length should be $1\frac{1}{2}$ to 2 feet per head, and self feeders should have 2 to 3 inches of feeding space per animal. Feeders and troughs should be sheltered if feeding is to be continued after the opening...
rains, as milled feeds, after wetting by rain, become unpalatable.

Feed preparation

The capital and labour costs of feed preparation may be warranted where there is a high proportion of grain in the diet because rolled, crushed or milled grain is more digestible than whole grain.

However, the number of animals to be fed and the cost of grain should also be taken into account before deciding whether or not to buy a machine. The greatest likely loss in feed conversion efficiency if the grain is not processed will be about 20 per cent.; under many conditions it will be less than this.

The most palatable feed is produced by rolling the grain component to split the husk without breaking it into small pieces. A 10-inch roller will process 2 to 4 tons of grain per hour. Smaller machines are also available.

A hammer mill is suitable if a screen size of 3/16th. to 5/16th. in. is used and the proportion of whole grains is kept as low as possible. Milling and grinding tend to produce too much fine material which can aggravate digestive upsets, and reduce palatability. Hammer mills require more power than rollers, but can also be used to process hay and other feeds, which will be necessary if such mixtures are fed by means of a self-feeder.

A feed mixer is not vital, but saves labour in big-scale operations and where mixed feeds have to be used. Precise mixing ensures that each animal gets its proper share of each ingredient. Mixing is essential when animals are being introduced to a new feed in self-feeders because it is impossible to ration the quantity eaten by each animal. The full diet, including roughage, has to be mixed so that there is no danger of the animals eating too much of the grain component, during this stage.

FEEDS

The main considerations in selecting feeds are high digestibility and adequate protein, at minimum cost. Estimates of the crude protein content and digestibility of the commonly available feeds are given in the Table.

Weaners must have grains or other high-energy foods if they are to fatten satisfactorily by early winter. Rations should contain at least 50% grain with high quality leguminous hay, and no more than 85% oats or 80% barley with poor quality cereal hay. Wheat has similar feeding value to barley but needs extra care in introduction and may require some mixing with other grains because palatability is not always satisfactory.

A mineral mixture, such as the one below, should be included at 1.0% to 1.5% of the ration, or be available as a lick.

Rock salt—100 lb
Christmas Island phosphate—100 lb
Copper sulphate—8 oz
Cobalt sulphate—2 oz

Vitamin A should be given as 1,000,000 I.U. per head by injection or in the feed, at two-monthly intervals, starting when the animals have been on feed for two months.

The ration used should depend on the type of animals being fed, which could range from young weaners to mature steers. Hay and grain is suitable for slower-growing types and for all types in the fattening stage. Extra protein may be advantageous for faster-growing types if the roughage available is of average or poor quality. It may be fed as 5 to 6% meat meal, or 8% sweet lupins, or 3% meat meal plus ½% urea, or 4% lupins plus ½% urea.

Animals grown to the 9 to 12-month baby beef stage need 12 to 14% crude protein in a ration that is 70% digestible. A useful ration would be:

Rolled barley—70 lb
Clover hay (good quality)—30 lb
Urea—1 lb
Mineral mixture—1 lb

If the hay or other source of roughage is of poor quality it should be supplied as a lower proportion of the mixture (15 to 25 per cent., depending on the type of grains used).

Feeds of relatively high roughage content can be used for lot feeding mature steers. These feeds are still costly, however, and it is only worth maintaining an animal that has almost stopped growing if prices are expected to rise considerably in a short period of time.

Feeding

Introduce the cattle gradually to a high cereal diet to prevent digestive troubles. Put hay alone in the troughs or feeders for
the first few days so that the animals become accustomed to feeding from containers. If self feeders are used, the hay should be chaffed or milled. For baby beef, the ration for the next four days could be 10 lb hay and 2 lb cereal mixture per head per day. Increase the cereal fraction and reduce the hay fraction by 2 lb every four days until the desired final proportions are reached.

With self feeders the cereal and hay must be mixed, as there is not enough space for all animals to feed at once, and "grain poisoning" will result from high intakes of cereal by animals that take to the feed quickest, if the grain is not diluted with roughage.

Feed can be satisfactorily introduced with troughs, providing there is enough space for all animals to feed at once. The daily intake can be regulated by supplying the prescribed amounts of the feedstuffs each day. The hay can be placed on top of the cereal or a hay rack can be used above the trough.

Hay fed separately away from the troughs could result in slower development of animals that eat less cereal mixture but camp on the hay.

Any changes in the type of grain used should be made gradually, over a period of one to two weeks.

After introduction, feed should be available to the animals at all times so that a high growth rate is maintained. This also saves labour as several days' supply can be dispensed in the one operation, if sufficient capacity of troughing or self-feeders is available.

Health

Most problems are due to sudden changes in diet; these can be fatal, especially if urea is introduced too quickly. First intakes of urea should be half an ounce or less per head per day, thoroughly mixed with the feed. If the feed supply runs out for more than one day, feeding should start again at least at the one part hay to one part cereal mixture stage. "Grain poisoning" ranges in severity from scouring only, to sudden death.

Diseases

Pinkeye could be a problem in the feedlot, but is not always serious. Footrot could be a problem in wet areas, and a well drained site is essential. Enterotoxaemia has not yet been reported in W.A. feedlots. Treatment for worms should be given if new stock are in poor condition.

<table>
<thead>
<tr>
<th>Feed</th>
<th>Per cent crude protein in dry matter</th>
<th>Per cent digestibility of dry matter</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barley</td>
<td>10-12</td>
<td>70-75</td>
<td>A good fattening grain. Fibre content helps prevent digestive troubles in ruminants.</td>
</tr>
<tr>
<td>Oats</td>
<td>7-10</td>
<td>65-70</td>
<td>Efficiently utilised. Expensive.</td>
</tr>
<tr>
<td>Wheat</td>
<td>12-14</td>
<td>about 80</td>
<td>Relatively cheap source of high quality protein. Rather variable.</td>
</tr>
<tr>
<td>Linseed meal</td>
<td>35</td>
<td>60</td>
<td>Relatively cheap source of protein at $2 per bushel.</td>
</tr>
<tr>
<td>Meat meal</td>
<td>50</td>
<td>60</td>
<td></td>
</tr>
<tr>
<td>Sweet lupins</td>
<td>about 35</td>
<td>about 80</td>
<td></td>
</tr>
<tr>
<td>Urea</td>
<td></td>
<td></td>
<td>Very cheap source of nitrogen. Supplies the nitrogen equivalent of about 2½ times its own weight of crude protein. Can only be used to supply up to one third of the total protein requirement, and only for ruminants.</td>
</tr>
<tr>
<td>Lucerne hay</td>
<td>10-20</td>
<td>up to 60</td>
<td>Very variable.</td>
</tr>
<tr>
<td>Vetches or</td>
<td>6-16</td>
<td>about 50</td>
<td>Usually about 25% dry matter. Should be self-fed or mechanised handling. Very variable.</td>
</tr>
<tr>
<td>clover hay</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Silage</td>
<td>20</td>
<td>up to 65</td>
<td></td>
</tr>
</tbody>
</table>