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BEEF FEEDLOTING — A DISCUSSION PAPER

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Small cattle enter a beef feedlot — larger cattle emerge. The larger cattle may proceed back to *in situ* grazing, or into another feedlot, or be slaughtered in a processing works and converted to meat. From this point meat finds its way into a consumer's shopping basket via wholesale and retail trading. To have a role in this chain, beef feedlotting must make a profit.

CAPITAL

Capital is required to establish the feedlot. The facilities required and their location are described by Kerr* who points out the extreme importance of the office as management's centre for the operation and enumerates two principles or objectives of facility design and construction. First, the cattle and the people must be in the most productive environment. Secondly, the final layout must provide the best access and traffic flow for cattle, feed, equipment and people. Kerr suggests that the cost of yards would decrease from \$40 to \$25 per head as capacity increased from 1 000 to 10 000 beasts, while McIvor and Jagusch suggest that the total capital cost for yards, buildings and plant, might range from \$90 down to \$35 per beast depending on feedlot size, plant automation and the inventiveness of the planner.

Capital is also required for cattle. How much will depend upon their age/liveweight and market at purchase. McIvor and Jagusch highlight the many choices facing the entrepreneur in the purchase of cattle as well as in the kind of facilities. However, the purchase of cattle will absorb at least 70% or more of the total capital required to establish a feedlot.

THROUGHPUT

Throughput in a feedlot is an important factor in profitability because of its effect on capital turnover and requirements and the overhead capital cost of facilities. Throughput is

*References are to papers presented in this symposium.

affected by the kind of cattle used — their breed, sex, and age/liveweight. The opportunities which these factors provide for manipulation of throughput are clearly detailed by Barton.

Throughput is also affected by the number and time of entry of the cattle. No mention has been made by any author of where cattle might come from. The availability of cattle suitable for a finishing feedlot varies considerably throughout the year. A strength of finishing feedlots is their potential for a regular output. This requires a predictable and regular supply of store cattle and may require both forward contracts with store stock producers and a premium to encourage out-of-season store stock production.

An alternative means of hedging against the problem could be to have a mixture of cattle of different liveweights and/or age in the feedlot at any one time.

KIND OF CATTLE

The kind of cattle put into the feedlot should be related to the requirements of the processing/marketing sections of the beef chain. Barton stresses the need for feedlot managers to attempt constantly to match production and market requirements. In his words, "it is imperative for the manager to know in detail the requirement of the market to which beef from his feedlot is to go; without this information and its application, production from the feedlot may not meet the needs of the market. There is plenty of opportunity to manipulate the kind of cattle entering the feedlot. These manipulations allow the matching of production and market requirements. The successful manager is the person who does this best". Barton did not mention any specific breeds probably because what matters is the age or size at maturity of the cattle. If lightweight carcasses with an adequate fat cover are required, then early maturing cattle should be used. Conversely, if heavyweight carcasses without an excess of fat are demanded, then late maturing cattle are the choice. Bremner suggests that the latter type of cattle could be required to supply a 26% increase in the European primal cut trade by 1980.

MEAT SPECIFICATIONS

Both Bremner and Barton remind us of the distinction between manufacturing the primal cut or table beef. They, along with Trounce, suggest that feedlotting is suited to the production of the latter with its requirement of good appearance, tenderness, and succulence, maximum or optimum or minimum fat cover and general weight ranges. Here is found the first major weak spot in the beef chain. What does the meat

trade mean by these subjective terms, and does the producer know how he might consistently produce to the meat trade's subjective or general description of those qualities and requirements? No paper in this symposium has convinced me that starting a feedlot will automatically produce the closer liaison and exchange of more objective specifications between producer and marketeer which are essential if the producer is to regularly produce what best suits the marketeer. However, Bremner shows an awareness of this gap when he suggests that production and marketing must not be isolated but rather must mutually appreciate and understand one another's problems.

CATTLE PERFORMANCE — GROWTH RATE

Throughput is also affected by the performance of the cattle in the feedlot. Efficient throughput demands high performance which is largely a function of high growth rates. Jagusch and McIvor make it clear that metabolizable energy is of prime importance and concern in feeding. When considering feeding, attention must be focused on intake and metabolizable energy concentration of the feed. This point was clearly highlighted by private operations and research in a review of feedlotting in New Zealand (Thompson and Monteath). In view of the good agreement between the ARC (1965) energy requirements quoted, and the calculated actual metabolizable energy intakes reported by Thompson and Monteath, entrepreneurs and managers should be able to plan their feedlot operations confidently and accurately using tables given by Jagusch and McIvor.

The description by these authors of the various feed processing techniques is interesting, particularly in view of the higher growth rates reported by Thompson and Monteath, all obtained with pelleted feeds. Unfortunately, Jagusch and McIvor do not present data on the effect on performance of processing, nor is there any indication of costs. This is another gap in our feedlot technical knowledge and operators and researchers will continue to debate the merits of processing until research provides the required information.

McIvor *et al.* raise the contentious issue of dressing-out percentage. There is a school of thought that believes that dressing-out percentage is improved with high energy feeding. On the other hand, others suggest that the increase in dressing-out percentage is due solely to slaughter at a heavier weight. As increased dressing-out percentage is frequently advanced as a good reason for establishing a feedlot, this question needs to be resolved.

PERFORMANCE — ANIMAL HEALTH

Animal health affects performance through reduced growth rates and mortality. Here is a specific opportunity for day-to-day management to influence feedlot profitability. The more minor animal health problems appear to be easily dealt with by vaccines, drenches and sprays. The major problems of excess grain intakes, physical injury and "failure to do" are best avoided through good facilities, careful observation, feed planning, correct management of incoming cattle and good stockmanship. Morris details a preventive programme designed to promote maximum performance as quickly as possible in incoming stock. The important feature in introducing high energy rations is the amount of grain in excess of what the animals are accustomed to, rather than the absolute level of grain intake.

CAPACITY

Capacity obviously affects the throughput. There seem to be economies of scale as capacity increases but nobody has suggested an optimum size or the basis on which the capacity of a feedlot should be decided.

WASTES

Useful figures on the kinds and quantities of wastes which can be expected from a feedlot are given by Bell. Minimal rainfall with maximum drying reduces the odour, runoff, ground-water contamination and fly problems. He suggests several systems of dealing with feedlot wastes. However, it appears there have been too few planned studies of feedlot waste disposal in New Zealand. It is desirable and important that existing and new feedlot operators take account of effluent disposal and its environmental effects, consulting, and if necessary enlisting the aid of specialists in this field.

LABOUR

There is virtually no mention of the labour requirements of a feedlot except by McIvor *et al.* who suggest one man to 1 000 cattle. Is this correct? On the other hand many people have mentioned management and the role it plays in feedlot profitability.

MANAGEMENT

All authors refer to and stress the importance of management. If the feedlot were bread, management would be the yeast. Without management a feedlot would be a financial

failure. On the other hand, given a management strain which can skilfully juggle cattle, dollars and feed, as well as keeping accurate records and displaying stockmanship, the same feedlot can be transformed into a financial success. McIvor *et al.* sum it up by highlighting the complexity of a feedlot operation, and conclude by reminding us of the need for management to be thorough in its choice of concept, fastidious in planning, and efficient in its programme execution.

EXPENDITURE — PRICE OF CATTLE

Total expenditure includes the price of cattle. When negotiating cattle purchases some reference must be made to the eventual sale price. McIvor *et al.* demonstrate how a per-kg liveweight or carcass weight purchase price above or below eventual sale price can decrease or increase, respectively, the return that is derived from added liveweight. While this principle must be understood when planning, it must be remembered that for income purposes it really is simply the difference between sale and purchase prices per beast which matters.

INCOME — PRODUCT PRICE

The value of cattle leaving a finishing feedlot is determined by what the meat marketeers pay for the carcass. Bremner, adopting wisdom rather than valour, chooses not to indulge in price forecasting. While producers would have relished some definite prices from the crystal ball, the impossibility of reliably forecasting prices is well illustrated by Trounce. All potential markets for table beef are subject to political interference and seasonal variations in cut demand. Increased table beef production results in increases in difficult-to-sell trimmings — after all, who is interested in marbled mince. In addition, extra chilling facilities and packaging knowledge are required if there is an increase in table beef from feedlots, and the 56-day time limit increases the risk that shipping and documentation deadlines will not be met.

However, Bremner does suggest trends which feedlotter could expect in the future. Although the demand for beef will continue, we cannot expect a continuing rise in prices similar to last year. The price trend of the past 10 years would be a useful guide and there is expected to be a greater margin between light and heavy beasts within any grade. This would be to the feedlotter's advantage.

INCOME — REBATES

It has been suggested that one of the reasons for an upsurge in interest in feedlotting has been the processing com-

panies' desire to reduce their overhead costs. Overhead costs may be reduced by spreading the kill to give better utilization of labour and plant. Overhead costs per kg of beef processed are also reduced by killing heavier beasts. Feedlotting has much to offer the processing companies in these possible economies. It seems reasonable that *some* of these economies should be returned to the feedlotters. No figures have been given for cost savings associated with the spread killing, but Bremner suggests a 40% saving per kg carcass by killing a beast yielding a 320 kg instead of a 180 kg carcass.

FACTORS AFFECTING PROFITABILITY

An important consideration in beef feedlotting is the effect on profitability of changes in various input and price factors. To examine these effects a budget was prepared (Appendix 1) using costs based on those cited by McIvor *et al.* The effect on profitability of various input factors is shown in Table 1 in decreasing order of importance. Management has not been included in the table. However, overseas experience and many comments suggest that management is probably at least equally important as product price and is the key to success.

In view of the effect that product price changes have on profitability (Table 1) it is obvious why potential feedlotters should be so concerned about the price and sale of their product. In spite of my earlier comments about marketing difficulties, I believe that there should be a much closer association and sharing of risk between marketeers and the entrepreneurs attempting to explore the possibilities of feedlot finishing.

TABLE 1: EFFECT ON PROFITABILITY OF VARIOUS INPUT FACTORS

Factor	Size of Change		Profit Change	
	(Actual)	(%)	(\$)	(% of capital)
Sale price	± \$4.40/100 kg	± 5	± 62 000	± 13
Purchase price	± \$6/hd	± 5	± 34 500	± 7
Throughput	— 600 beasts	— 10	— 37 200	— 8
Growth rate	± 0.125 kg/hd/day	± 10	± 35 000	± 7
Cost of feed	± 0.05c/MJ	± 10	± 31 200	± 6.5
Errors in prediction of feed requirements	+ 5% more feed required		— 15 600	— 3.3
Death/failure rate	± 1%	± 25	± 13 000	± 2.8
Labour	+ 2 men	+ 100	— 10 000	— 2
Effluent disposal	± \$1/hd	± 100	± 6 000	± 1.5
Facilities	± \$11/hd	± 20	—	± 1

A number of meat marketeers have embarked on their own feedlot investigations and I wonder what advantages this has to offer over a co-operative venture with progressive business-minded farmers. Are the marketing difficulties such that they can only be accommodated by retaining complete control of the feedlot operation? Are marketeers concerned about loss of farmer goodwill should the marketing of the meat fall below expectations? Or is it that feedlotting, when efficiently managed and closely allied to forward market contracts, is likely to show a return to capital as good as any alternative investment?

ALTERNATIVE USES OF CAPITAL

Finally, it is not sufficient for the feedlot just to show a profit. The profit must at least equal or be better than the entrepreneur could obtain with the same capital in an alternative investment.

APPENDIX 1

FEEDLOT PROFITABILITY

Capacity 2 000 steers, three times per year

Buy at 300 kg for \$120, feed 20 and 100 days, gain 125 kg

Slaughter \$88/100 kg, 55% dressing, 4% deaths and/or failure to perform
Capital outlay and running costs estimated from Kerr and McIvor *et al.*

CAPITAL REQUIRED

Land, buildings and plant, 2 000 at \$55	....	....	....	\$110 000
Stock, 2 000 at \$120	....	....	....	240 000
Working capital, 2 000 at \$62	....	....	....	124 000
Total capital	....	....	....	\$474 000

GROSS INCOME PER GROUP

Sell 1 920 at \$216	....	....	....	....	=	\$414 700
Less 2 000 purchased at \$120	....	....	....	....	=	240 000
						<u>\$174 700</u>

<i>Less:</i>					<i>Per head</i>	
Feed costs (0.48c/MJ)	....	....	....	....	\$52.00	
Animal health	....	....	....	....	1.50	
Transport	....	....	....	....	5.00	
Electricity and administration	....	....	....	....	0.30	
Vehicles	....	....	....	....	0.40	
R and M, buildings and yards	....	....	....	....	1.20	
Plant	....	....	....	....	0.60	
Effluent removal	....	....	....	....	1.00	
					<u>\$62.00</u>	
2 000 beasts at	....	....	....	....		\$124 000
Income per group	....	....	....	....		<u>\$50 700</u>

ANNUAL INCOME

3 groups at \$50 700	....	....	....	....	=	\$151 000
<i>less:</i>						
Labour WOM	....	....	....	\$7 000		
2 men at \$5 000	....	....	....	10 000		
				<u>\$17 000</u>		
Insurance and rates, 10c on 6 000 beasts	....	....	....	600		
Depreciation 20c on 6 000 beasts	....	....	....	1 200		
				<u>18 800</u>		
Net annual profit	....	....	....	....		<u>\$132 000</u>
						= 28% return on total capital of \$474 000