COMPARISON BETWEEN TWO METHODS OF SELECTING 20-MONTH STEERS FOR SLAUGHTER

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SUMMARY

In trials involving 62 beef bred steers, a small increase in average carcass weight of 1.9% was achieved by selecting steers of a similar breed and age for slaughter on a basis of the lowest liveweight gain over the preceding two weighing periods of one week compared with those cattle selected on the basis of highest liveweight.

No measurable difference was detected in the carcass composition of the two groups.

It is indicated that this small increase would have an economic influence on a large number of cattle.

INTRODUCTION

The decision as to which steer or steers should be selected from a group for slaughter is likely to influence the carcass weight, carcass classification, feed conversion efficiency and hence profitability.

Experimentally several different criteria have been used to determine when cattle should be slaughtered; these include a predetermined age (Barton, 1973; Dalton and Everitt, 1972), a given liveweight (Preston, *et al.*, 1963), body fat level and zero liveweight gain (Conway, 1963). There does not appear to be any specific comparison of these methods in optimizing beef production. Commercially the norm is to slaughter the heaviest cattle (Ensminger, 1968) because of their decreasing feed conversion efficiency. However, it has been argued (Nicol, 1971), that the slower-growing animals at time of selection for slaughter should be killed, since, within a relatively narrow age and weight range, liveweight gain strongly influences feed conversion efficiency.

Two trials involving 15- to 18-month-old beef bred steers were designed to compare two methods of selection for slaughter:

(1) The animal(s) with the highest liveweight (H-LW);

(2) The animal(s) with the lowest liveweight gain recorded over the two previous weighing periods of one week (L-LWG).

METHODS AND RESULTS

In each of two trials, 2 weight-randomized groups of steers (11 per group in 1972, and 20 per group in 1973) were grazed together on irrigated pasture at a stocking rate of approximately 6/ha from November until they were slaughtered over a 10-week period, beginning in late January of each year.

Steers were weighed once a week in the morning immediately after removal from pasture and those not selected for slaughter returned to pasture after weighing. Two steers from each group were slaughtered each fortnight in 1972 and 2 per week from each group in 1973. In 1972 the steers were slaughtered the day after weighing but in 1973 each steer was individually fed on good meadow hay for 1 week after removal from pasture and then killed.

Hot carcass weight (less kidneys and channel fat), carcass grade and carcass saleable meat yield were recorded. The results are given in Table 1.

DISCUSSION

While the difference in liveweight gain over the trial period between the groups was only statistically significant at the 20% level of probability, the advantage to the L-LWG in terms of additional carcass weight (1.9%) would be of some economic significance on a large number of cattle.

These results were obtained with no attempt to minimize the errors inherent in measuring liveweight gain over a short period of time, other than that the gain was taken over two weighing periods. It was considered impractical to withdraw feed for 24 h in an effort to equilibrate gut fill.

The considerably wider range in carcass weight obtained in the L-LWG group is indicated by the larger standard deviation in the L-LWG group. Whether this effect would have a further economic influence depends entirely on the differential in payment for heavier versus lighter carcass weights.

The absence of any significant treatment effect on carcass grade or yield emphasizes that the return per kg carcass weight was not affected by this comparison. The average carcass from the L-LWG group would yield 145 kg saleable meat and the H-LW would yield 142 kg. It is possible that at higher carcass weights differences in yield might occur. Also, both groups of cattle had been subjected to a 10% culling before the trial which reduced within-group variation.

Because the average liveweight of steers remaining on the trial increased at a greater rate in the L-LWG group, it can be argued that a slightly lower carrying capacity would have

TABLE 1: LIVEWEIGHT AND CARCASS DATA FOR THE 1972 AND 1973 TRIALS (MEAN ± SD)

		Initial L'weight (kg) SD	*Slaughter L'weight (kg)*	*Liveweight Gain (kg/day)*	*Dressing Out %*	*Carcass Weight (kg)*	*Carcass Grade*	*"Yield" %*	*Bone %*	*Fat and Waste %*
Lowest										
l'weight	1972	342 ± 16	437 ± 22	0.85 ± 0.27	52.9 ± 2.1	231 ± 19	All GAQI	66.1 ± 0.72	20.5 ± 0.80	13.5 ± 1.31
gain	1973	306 ± 14	391 ± 26	0.71 ± 0.13	51.9 ± 1.6	203 ± 14	19 GAQI	67.1 ± 1.16	20.6 ± 0.85	12.2 ± 1.70
(L-LWG)							1 FAQ			
	Av.	324	414	0.78	52.4	217		66.6	20.6	12.8
Highest										
l'weight	1972	344 ± 17	427 ± 6	0.75 ± 0.12	53.1 ± 1.8	227 ± 12	All GAQI	66.5 ± 0.98	20.8 ± 0.64	12.7 ± 1.06
(H-LW)	1973	305 ± 15	385 ± 14	0.69 ± 0.14	52.1 ± 0.8	200 ± 6	All GAQI	67.5 ± 1.50	20.9 ± 0.88	11.7 ± 1.33
	Av.	324	406	0.72	52.6	213		67.0	20.9	12.2

been necessary in this group. By computing the relative weekly feed demands of the 1973 treatment groups, using the intake figures available, it can be shown that the feed profiles can be maintained at a similar level if three steers in the L-LWG were killed one week before schedule. This loss of potential liveweight gain is equivalent over 100 steers of reducing the advantage in carcass weight to the L-LWG group from 300 to 260 kg.

From a commercial point of view it may be necessary to set a minimum liveweight which must be achieved before killing by L-LWG would operate. It is unlikely also that many beef producers will draft or weigh as frequently as in this work. However, the principle that liveweight gain is as important, if not more so, than liveweight at drafting in optimizing beef output per animal is still important.

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