1:26

Greass quality in refed cull Friesian cows

R.K.D. BHOYA AND B.W. BUTLER-HOGG

Mar AND N.W. BUTLER-HUGG Mar Research Institute, Langford, Rristol, UK

Introduction

 $\hat{u}_{[1]\ Cours}$ are an important source of beef in the UK, contributing 25% to all $\hat{u}_{[1]\ cours}$ $t_{\rm s}^{\rm Mus}$ are an important source of beef in the uk, constructed to $t_{\rm s}^{\rm Mus}$ and $t_{\rm s}^{\rm Mus}$ and $t_{\rm s}^{\rm Mus}$. The Friesian breed is particularly $t_{\rm Mus}^{\rm Mus}$. ^{a staugh}terings (Allen, 1980). The Friestan block ^{hypertant} in the context of beef production, as the national dairy herd ^{here} which is over 85% Friesian) contributes 58% of the home produced beef, 19% $^{-20}$ TS Over 85% Friesian) contributes 58% of the none process of this being derived from cull cows. The carcasses, and meat, from these solutions of the second seco sulls, period derived from cull cows. The carcasses, and the regarded is period and but on the constitution, have traditionally been regarded to the second and but ont. s "particularly when in poor consition, have traditionarily and Dumont, is inferior in quality when compared with 'clean' beef (Boccard and Dumont, $|y_{0j}\rangle_{ang}^{ang}$ this is reflected in the large price differential between the two types Types, "Monthing is reflected in the large price differences weights command a Monthing to the specified weights command a menu." menuever, cull cows in good condition at specific may be able to be producers may be able to be porer animals. This suggests that some producers may be able to be the two the train cull cows by over poorer animals. This suggests that some products of by by over financial returns from cattle sales by feeding their cull cows who whe financial returns from cattle sales by feeding the constant of the sales by feeding the constant of the sales of the Ch_{position} of this gain, and the effects of feeding level on performance and ch_{ase} $c_{\rm HTG}^{\rm (scon}$ of this yain, and the effects of leaving reverses and $c_{\rm HTG}^{\rm (scon)}$ of this yain, and the effects of leaving reverses $c_{\rm HTG}^{\rm (scon)}$ of this yain, and the effects of leaving reverses $c_{\rm HTG}^{\rm (scon)}$ of this yain, and the effects of leaving reverses $c_{\rm HTG}^{\rm (scon)}$ of this yain, and the effects of leaving reverses $c_{\rm HTG}^{\rm (scon)}$ of this yain, and the effects of leaving reverses $c_{\rm HTG}^{\rm (scon)}$ of this yain, and the effects of leaving reverses $c_{\rm HTG}^{\rm (scon)}$ of this yain, and the effects of leaving reverses $c_{\rm HTG}^{\rm (scon)}$ of this yain, and the effects of leaving reverses $c_{\rm HTG}^{\rm (scon)}$ of the effects $c_{\rm HTG}^{\rm (sc$ ^{Ames}, 1983; Drennan, 1981). Part of this variation is no doubt due to affen. Terences in Cow condition (body composition) at the beginning of the magn refeeding period.

 $h_{[s]}_{study}_{study}$ examined the effects on carcass quality of feeding cows a complete $\|e_{l}\|_{e_{total}}$ Relleted diet ad libitum for periods of up to 112 days before slaughter.

Materials and Methods

 $^{\rm A}$ total of 28 cull Friesian cows, in very thin condition initially, were $_{\rm 1.500\, hm}$ corposition (left half $\mu_{\rm suph}^{\rm vol}$ f S cull Friesian cows, in very thin construction (left half ${\rm d}_{\rm suph}^{\rm suph}$ and their carcasses assessed for composition (left half ${\rm d}_{\rm suph}^{\rm suph}$ dispected and their carcasses assessed for composition (i.e., dispected; Williams and Bergstrom, 1976) and retail yield (right half bucherad. A^{rcher}ed; Williams and Bergstrom, 1970, and . A^{rcher}ed; Poneroy, Williams, Harries and Ryan, 1974).

 $\tilde{u}_{N_{\rm T}} = \frac{1}{N_{\rm T}} \frac{1}{N_{\rm T}}$ and dressed using standard procedures (Brown and $\tilde{m}_{\rm T} = \frac{1}{N_{\rm T}} \frac{1}{N_{\rm T}}$ to 15.5%. As expected from the increased fatness of the fed cows, fat trim increased over the feeding period, but from very low levels for subcutaneous fat. Intermuscular fat trim was always greater than subcutaneous fat trim and increased almost two-fold as the feeding period progressed from 0 to 112 days. Bone trim declined slightly over the feeding period, reflecting the increase in carcass weight rather than a decline in bone weight.

Discussion

Feeding cull cows that were initially in very poor condition had a beneficial effect on killing-out percentage, which is seen as an important determinant of commercial value in the live animal auction market. The major improvement occurred over the first 56 days, followed by a small decline at 112 days, possibly due to increased deposition of fat in the intra-abdominal cavity. Muscle:bone ratio also showed an improvement on feeding, indicating an increase in carcass value to the meat trader. Again the biggest improvement had occurred by 56 days.

A large part of the gain in carcass weight was dissectible fat, although the relative proportions of gain occurring as lean or fat changed with time on feed, and this had an effect both on saleable meat content of the carcass, and the composition of that meat. In the first 28 days of refeeding almost all carcass weight gain was lean tissue (ca. 96%), but thereafter rates of lean gain declined dramatically, and fat gain increased to over 80% of the total carcass weight gain. Over the first 56 days of feeding 46% of carcass weight gain was lean, while over the complete 112 days it was 43%, in close agreement with other published results.

Because carcass fatness increased over the feeding period, levels of fat trim also increased, but not in parallel with changes in carcass weight. This was reflected in an increased proportion of fat in the deboned, trimmed saleable meat, which suggests that greater amounts of fat appear acceptable in bigger joints when these are assessed visually.

Despite the increase in fat content of the saleable meat from fed cows the actual proportion of total carcass fat retained within the saleable meat declined from 56 to 44%. In a cow fed for 112 days the saleable meat

5 Comparing following 28, 56 and 112 days on one of two feeds (Table 1). Diet 1 Comparing 1, 10-6 MJNE/kg. $c_{\rm eq}^{\rm vas}$ following 28, 56 and 112 days on one of two scentained 11.8 MJ ME/kg dry matter, and diet 2 10.6 MJNE/kg.

 $a_{|e_{ab}|_{e}}$ Reat Was defined as the weight of trimmed and deboned primal cuts, $\beta_{|i_{1}|_{ean}}$, and forerib, loin, rump, topside, this $p_{l_{eq}}^{[more neat was defined as the weight of trimmed and deboned prime. Set is the set of trimmed and deboned prime. Set is the set of the set of$ $\label{eq:constraint} \begin{array}{l} \int_{a_{1}k_{2}}^{rean} trim. \mbox{ The high-value cuts were forerib, loin, rump, counterparts of the standard of$ n_{hol} of ^{salverside} and fillet. Retail Value Index was determined by the filler in the set of the set all (1976) and was used to rank carcasses according to

their commercial value. and the

 $\frac{h_e}{t_e} \frac{1}{t_e} \frac$ $t_{\rm tributes}^{\rm tength}$ of time over which cows were fed had a significant error of $t_{\rm tributes}^{\rm tributes}$ of Carcass quality (Table 2). There were no significant effects $t_{\rm tributes}^{\rm tributes}$ of Carcass quality (Table 2). $\eta^{-n_{\rm UEBS}}_{\rm tet, and no}$ of Carcass quality (Table 2). There were no significant to the state of th Tet, and no interactions between time on feed and diet, with the the topped and of interactions between time on feed and diet, with the topped and $\begin{array}{l} & (1)_{k=1}^{perion} \text{ of killing-out percentage: Cows fed diet 1 tended to nave a signal of the second percent percent than those fed diet 2, in part reflecting the differences of the tended to nave a signal of the second percent than those fed diet 2, in part reflecting the second percent than those fed diet 2, in part reflecting the tended to nave a signal of the second percent tended to nave a signal of the second percent tended to nave a signal of tended tended to nave a signal of tended tended$ In $\frac{m_{\rm pout}}{c_{\rm strass}}$ factors brought about by differing energy intakes. Values shown in $1_{\rm bole 2}$

 $T_{able\,2}^{\rm vass}$ fatness brought about by differing energy measurements are therefore derived from data pooled over both diets.

 $\{i_{j_1}\}_{j_1, j_2, j_3, j_4}$ efter contage increased markedly with feeding, reaching a peak of k_{j_4} efter contage increased markedly with feeding slightly after 112 days. wifter 56 days refeeding, then declining slightly atter its solution of the state of the solution of the solut $h_{\rm b}^{\rm regione}$ ratio was also improved with feeding, indicating that generation was also improved with feeding, indicating that generating for the state of saleable meat in $h_{\rm b}^{\rm reg}$ dects as well as fat. The percentage of saleable meat in $h_{\rm b}$ dects $|_{de_{\rm c}}^{\rm in} {\rm de_{\rm c}} |_{de_{\rm c}}$ declined slightly as the feeding period progressed beyond 28 days. $h_{i_1}^{side} = \frac{1}{4} e_{i_1}^{side} = \frac{$ $w_1^{\rm eq}_{\rm off}$ due to a combination of increasing fatness and $w_1^{\rm off}$ with a concomitant increase in levels of trim required. In resting a concomitant increase in levels of the high-value of the state of the set of the set of the set of the high-value of the set $t_{e_1}^{tern}$ sting a conconitant increase in levels of trim required. $t_{e_1}^{tern}$ sting by, the proportion of saleable meat in the high-value cuts was not the need $t_{e_1}^{tern}$ ced $t_{e_1}^{tern}$ structure all cows being 44.8 \pm 1.6%.

 $\frac{1}{\log_{red}}$, the proportion of saleable meat in the high-value contribution of saleable meat in the high-value contribution $\frac{1}{\log_{red}}$ by feeding, with the mean value over all cows being 44.8 \pm 1.6%. $\lambda_{i}^{\rm enced}$ by feeding, with the mean value over all cows being 44.0 \pm ..., $\lambda_{i}^{\rm enced}$ by feeding, with the mean value over all cows being 44.0 \pm ..., $\lambda_{i}^{\rm enced}$ value index also declined slightly over the feeding period, reflecting $\lambda_{i}^{\rm proportion}$ also declined slightly over the feeding period, reflecting λ_{i} and λ u_{e} in value Index also declined slightly over the feeding period, $i_{t_{n}}$ proportional decline in saleable meat content as cows increased in $i_{t_{n}}$

 $h_{h_e \ 0n} = \frac{h_e \ 0n}{h_e \ h_e \ h_e} = \frac{h_e \ 0n}{h_e \ h_e} = \frac{h_e \ 0n}{h_e \ 0n} = \frac{h_e$ a_1 (e.g., herived from the count of the factor of the feeding proportion of the feeding period was extended. In unfed cows the saleable meat a_1 (a_2 (a_3) (a_4) $c_{n_{1}}^{m_{1}}$ feeding period was extended. In unfed cows the saleable measurement of the animals fed for 112 days this had increased 10.7 $_{\rm X}$ fat while in the animals fed for 112 days this had increased

contained 35 kg of fat, while 44 kg had been removed as trim. In a lean, unfed cow, the comparable figures were 19 and 15 kg respectively.

References

Allen, D.M. (1980). Seminar in the CEC beef research programme, Rome 8-10 December, 1980.

Boccard, R. and Dumont, B.L. (1980). ibid.

Brown, A.J. and Williams, D.R. (1980). Meat Research Institute Memorandum No 46.

Drennan, M. (1981) Farm and Food Research, 12: 186-188.

Harries, J.M., Williams, D.R. and Poneroy, R.W. (1976) Animal Production 23 : 349-356.

Jones, S.D.M. (1983). Journal of Animal Science, 56 : 64-70.

Pomeroy, R.W., Williams, D.R. Harries, J.M. and Ryan, P.O. (1974). Journal of Agricultural Science, Cambridge 83 : 67-77.

Williams, D.R. and Bergstrom, P.L. (1976). C.E.C. LUXEMBOURG (eur 5720).

Wooten, R.A., Roubicek, C.B., Marchello, J.A., Dryden, F.D. and Swingle, R.S. (1979). Journal of Animal Science 48 : 823-830.

51

the charter and and address and

An and the billets of contest southing at meaning book a subplete in the test periods of up to 117 days retrain stangarter.

12-12-12-1

U C O a O O a P S P T a

1 10 mm

at rasor

Sewitson

015 55

(1) Principa and Y any life and life (off) and (of the set and set) and the analysis (off) and the set and the set of the set of

¹ "States and dramatic server should be influence of thread and the server as an antiset struct with an fragility and by 20 mm.

and the second size ways on any time togeth size of the first of the second sec

The reference the second strategy are enclosed as $-\infty$. The second strategy are been used in the second strategy are been by the second strategy are been by the second strategy are second as a second strategy are been by the second strategy are been by

¹¹ The contractive constance for one a cipalitant different of one of the contract problem (including in the contract of the contract in terms of one optimic (including the contract of the difference) are contracted and for any local residence of the difference that are not find only on the contract to the contract difference that are the contract contract to the contract the difference of the contract of the contract to the contract difference of the contract of the contract to the contract difference of the contract of the contract to the contract difference of the contract of the contract to the contract to the contract of the contract of the contract to the contract difference of the contract of the contract of the contract.

¹ An and a second anomaly with fraction and the a fract of the second second part of the second second part of the second s

The sector according to the sector of the sector and the sector of the sector according to the sector

Table 1. Numbers of cows slaughtered after periods of ad libitum feeding

		Days o	n feeding	
el Carlos and	0	28	56	112
iet 1		3	5	3
liet 2		4	5	3
Total	5	7	10	6

It assess with anti-one lain titing (22, 901), we thereafter same of any pairs bettern departuality, and the pair instrument to over 201 of the same carities weight with. There are first \$6 days is tending \$6. of thereas everyt pairs any hear, watte some the consistent \$12 days is, as with \$6 state present, its other pairtney results.

Provide an approximation of the field of orbit, have a factor of the control o

theories has increase in the context of the solution must firm the cont he actual respection of prior context and actual actual an establish and contains from the target are and for the first are the offente must

Table 2. Carcass yield and quality in cull cows fed ad libitum for 0, 28, 56 or 112 days

	1	SED	Sig			
	0	28	56	112	-	diff.
Killing-out %	45.2	47.6	53.1	50.8	1.5	***
Muscle:bone ratio	3.5	3.6	4.1	3.8	0.2	***
% saleable meat (SM)	73.3	73.9	71.4	70.3	0.9	***
% SM in high-value cuts	45.2	44.2	45.4	44.0	0.9	NS
Retail Value Index	69.9	69.9	67.1	65.1	1.3	**

Table 3. Composition of saleable meat (SM) and its trimmings

	1	Days on feeding				
and the said	0	28	56	112		of diff.
% lean in SM	89.3	90.7	85.0	84.5	1.6	***
% fat in SM	10.7	9.3	15.0	15.5	1.6	***
% SCF trim	1.5	1.1	3.9	4.6	0.8	***
% IMF trim	5.0	4.8	7.7	9.2	0.8	***
% bone trim	19.9	20.2	16.7	16.4	0.9	***