

## THE EFFECT OF CASTRATION AND PLANE OF NUTRITION ON GROWTH OF MALE ZEBUS

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Knowledge is limited about the effect of castration on growth and carcass characteristics of Zebu cattle. Previous results (Hale & Oliver, 1972) have indicated that when livemass gains on veld are less than 0,5 kg/day, steers grow as rapidly as do bulls. Essentially, this lack of difference between bulls and steers may be ascribed either to some genetic factor which prevented manifestation of the potentially superior growth rate of bulls or to plane of nutrition provided by veld which may have been inadequate (Palsson & Verges, 1952). If it was the low plane of nutrition provided by veld which prevented bulls from growing more rapidly than steers, bulls should outperform steers when fed on a high plane of nutrition.

Twelve Zebu bull calves (8,5-9 months old) were used in a factorial experiment (2 x 2) to examine this possibility. Six animals were castrated (Burdizzo's forceps)

on 16 August 1965. Six animals remained intact. Three intact and three castrated animals were penned and fed a concentrate ration according to appetite (high plane groups) between 25 August 1965 and 5 January 1966 and between 8 June 1966 and slaughter on 29 December 1966. The other animals (low plane groups) were offered half the amount of concentrate consumed by the high plane animals. During these periods, animals had free access to veld hay. However, after 23 November 1966 no veld hay was available. All animals grazed pasture between 5 January 1966 and 8 June 1966.

Source of animals, composition of ration and determinations of bodymass and slaughter and carcass measurements have been described (Hale & Oliver, 1972). Food consumption by each group of animals was measured.

Substitution in the rate of undecorticated cotton seed for cotton seed meal (which was temporarily un-

**Table 1**  
*The effect of castration of zebus on growth and slaughter characteristics*

PLANE OF NUTRITION	HIGH		LOW		OVERALL STANDARD ERROR
	BULLS	STEERS	BULLS	STEERS	
TREATMENT					
Average daily gain (kg/day)					
25.8.65-5.1.66	0,52	0,44	0,50	0,38	0,03
5.1.66-8.6.66	0,17	0,23	0,29	0,32	0,02
8.6.66-23.11.66	0,70	0,60	0,56	0,53	0,01
Final bodymass (kg)	371,5	344,3	348,1	329,2	2,93
Consumption of ration (kg/day)					
15.9.65-5.1.66	3,80	3,53	2,33	2,26	
8.6.66-23.11.66	5,77	5,66	2,98	2,98	
kg ration/kg bodymass gain					
15.9.65-5.1.66	6,22	7,15	4,36	6,55	
8.6.66-23.11.66	8,24	9,44	5,32	5,65	
Mass (kg) of carcass	214,8	194,0	193,5	189,4	2,22
Hindquarter % side	50,4	51,9	49,4	51,0	0,33
Length of leg (mm)	768	748	741	754	0,51
Length of carcass (mm)	110	1121	1103	1097	0,69
Thickness of flank (mm)	27	22	22	21	0,05
Width eye muscle (A) (mm)	133	129	126	125	0,24
Depth eye muscle (B) (mm)	98	95	97	93	0,08
Depth back fat (mm)	02	09	04	07	0,05

available) after 19 November 1965 affected high plane animals more severely than low plane animals. Consequently, during the first feeding period, bulls grew 18,2 % more rapidly than steers on the high plane of nutrition and 31,6 % more rapidly on the low plane (Table 1).

When animals grazed pasture, bulls grew slightly more slowly than steers, although bulls always were heavier than steers.

During the second period in pens, bulls grew 16,1% more rapidly than steers on the high plane of nutrition and 6,2 % more rapidly on the low plane of nutrition. After 23 November 1966, no further hay was available and most animals lost bodymass until slaughter, despite an increase in concentrate ration. At slaughter, bulls were 27,2 kg (7,9%) heavier than steers on the high plane of nutrition and 18,9 kg (5,7 %) heavier on the low plane ( $P < 0,01$ ).

Bulls consumed more concentrate than did steers, particularly on the high plane of nutrition, but utilized their food more efficiently for growth than did steers.

Castration did not affect dressing percentage. Mass of carcass of bulls exceeded that of steers ( $P < 0,01$ ), particularly on the high plane of nutrition (10,7 %). Castration did not affect mass of hindquarter but hindquarters of

steers comprised a greater percentage of mass of side than did those of bulls ( $P < 0,01$ ). Bulls had slightly longer legs and carcasses than steers. Flanks of bulls were thicker than those of steers on the high plane of nutrition. Maximum width and depth of *longissimus dorsi* muscle were greater in bulls than in steers but not significantly so. Bulls had considerably thinner back fat than steers ( $P < 0,05$ ).

The response to castration in the present trial contrasts with the lack of response noted when animals of similar breeds grazed veld (Hale & Oliver, 1972). This indicates the importance of plane of nutrition and/or management system in the practical application of use of bulls for beef production. Unless animals are reared intensively on a consistently high plane of nutrition, no advantage will arise from use of bulls instead of steers and the problems of management and the inferior quality of the meat of bulls will preclude their usefulness. Present results show that if rate of increase in bodymass is consistently in excess of 0,5 kg/day use of bulls instead of steers will allow more efficient production of lean meat.

#### References

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