

CONSUMER RESPONSE TO MEAT FROM BRAHMAN CROSS CATTLE FINISHED ON IRRIGATED *LEUCAENA*W. J. RYAN^a, B. L. McINTYRE^a and D. PRATCHETT^b^aW.A. Dept of Agriculture, Baron-Hay Court, South Perth, W.A. 6151.^bW.A. Dept of Agriculture, PO Box 19, Kununurra, W.A. 6743.

SUMMARY

Eighteen month old Brahman cross steers, finished on *Leucaena* pastures in the Ord River Irrigation Area were transported to the south-west for slaughter and quality assessment by a meat processor and consumers. Forty-three out of the 49 carcasses were considered suitable for sale in carcass form. Consumers were asked to rate samples of 3 cuts for tenderness, flavour and acceptability. They also compared the meat with the grilling steak they normally purchased. For striploin and cube roll more than 80% of consumers rated it as tender or very tender. The value for rump steak was 57% for the same 2 categories. The responses for the other assessments were similar for all 3 cuts with 80% of consumers rating the flavour as good, and between 75 and 85% rating the acceptability as either good or very good. When compared to the grilling steak they normally purchased, over 90% of consumers assessed the meat as being as good as or better than that which they normally bought.

Keywords: meat quality, consumers, pastoral cattle, *Leucaena*.

INTRODUCTION

Traditionally meat from cattle in the Kimberley region of Western Australia has been suitable only for manufacturing or hamburger beef. Due to slow growth rates, animals do not reach suitable levels of finish until they are 3 years of age and are too old for the high quality domestic market. This has been overcome to some extent over the last 10 years by the introduction of Brahman cattle which have faster growth rates than the traditional Kimberley Shorthorn. In addition, the development of high quality irrigated pastures of *Leucaena* and pangola in the Ord River Irrigation Area has enabled growth rates of about 0.7 kg/day to be maintained year round (Pratchett and Trigone 1989). These workers showed that by 2 years of age Brahman and Brahman cross weaners produced carcasses that are close to the requirements for the domestic market (carcass weight 180-220 kg, fat 4-12 mm). Eating quality evaluations of beef from cattle raised under this system indicate that the meat produced is likely to be suitable for this higher priced market (Pratchett *et al.* 1992).

While experimental results indicate that meat from these animals is suitable for the domestic retail market, meat **processors** and retailers remain suspicious of the quality of meat from animals grown in the north of the state.

The aim of this project was to determine the acceptability of meat **from** Brahman cross cattle finished on irrigated *Leucaena* pastures by meat **processors** and consumers in the south-west of Western Australia.

MATERIALS AND METHODS

In June 1989, 49 Brahman cross steers were weaned at Ord River Station in the East Kimberley region of W.A. and transferred to the Ord River Irrigation Area. The steers grazed on irrigated pastures consisting of a mixture of *Leucaena* and pangola grass for a period of 11 months until the end of April 1990. At this time they were assessed as having reached fat score 3 and being suitable for slaughter. The cattle were purchased by a meat wholesaler and transported to their abattoir in the south west of Western Australia for slaughter. The journey of approximately 3300 km was completed in 2 stages. After travelling the first 1000 km from the Ord River Irrigation Area to Broome the cattle were off loaded and spelled for 24 h. The remaining 2300 km to the south west was completed in about 32 h. On arrival the cattle were rested for 24 h before being slaughtered.

The carcasses were subjected to high voltage electrical stimulation (800 volts RMS half sinusoid, 14.3 pulses/s) within 1 h of slaughter. The fat cover was measured at the **P8** site and the hot carcass weight recorded immediately after slaughter. The following morning the carcasses were assessed according to the normal commercial criteria used by the wholesaler to determine if carcasses were suitable for sale in carcass form. The criteria included meat **colour**, fat **colour**, excessive trimming due to bruising and carcass weight. Samples of cube roll, striploin (porterhouse) and rump steak were obtained from some of the carcasses that were suitable for sale in carcass form. These samples were vacuum packed and aged for 1 week. Reaction to the meat was assessed by providing samples to

consumers as they purchased their meat in supermarkets. Two supermarkets were used, one in a high and one in a lower socio-economic area.

The meat was sliced into steaks about 10-12 mm thick and these were cooked in electric frypans for approximately 5 min immediately prior to assessment. Consumers were given a sample of striploin, cube roll or rump steak and asked to rate it for tenderness, flavour and overall acceptability. Tenderness was assessed in 6 categories ranging from very tender through to very tough. Flavour was rated in 3 categories; good, average and poor. Acceptability allowed for the inclusion of other parameters such as meat colour and fat colour of the samples prior to cooking and was assessed in 5 categories; very good, good, OK, don't like it and strongly dislike it. Consumers were then asked to rate the meat from the *Leucaena*-fed animals as better, the same or worse than the grilling steak they normally purchased.

RESULTS

The mean $\pm$ s.e. (range) liveweight, carcass weight and fatness of cattle at slaughter were 409 $\pm$ 6 kg (344–500), 221 $\pm$ 3.5 (169-263) and 8 $\pm$ 0.4 (3-14).

Forty-three of the 49 carcasses were assessed as suitable for sale directly to retailers in carcass form and were sold in this way. Three carcasses were rejected due to excessive carcass weight, 2 due to yellow fat and 1 due to excessive trimming. A total of 236 consumers assessed the meat samples.

The results of the tenderness assessments are shown in Table 1. The distribution of responses from consumers was very similar for striploin and cube roll with more than 80% of consumers rating these 2 cuts as either very tender or tender and none assessing them as tough or very tough. Rump steak was rated tender or very tender by 57% of consumers.

Table 1. Consumer assessment of tenderness for each cut

Number and percentage allocating scores in the range from 1 (very tough) to 6 (very tender)

Joint	Score for tenderness											
	1		2		3		4		5		6	
	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)
Strip loin	—	—	—	—	8	8.5	10	10.6	49	52.1	27	28.7
Cube roll	—	—	—	—	3	4.8	7	11.3	36	58.0	16	25.8
Rump	—	—	1	1.2	19	23.4	15	18.5	33	40.7	13	16.1

The results of the assessment of flavour of the samples is presented in Table 2. Approximately 80% of consumers considered the flavour of the beef to be good and the distribution of responses was very similar for all 3 cuts. No consumers rated the flavour as poor.

Table 2. Consumer assessment of flavour for each cut

Number and percentage allocating scores in the range from 1 (good), 2 (average) and 3 (poor)

Joint	Score for flavour:							
	1		2		3			
	No.	(%)	No.	(%)	No.	(%)		
Strip loin	72	78.3	20	21.7	—	—		
Cube roll	50	80.6	12	19.4	—	—		
Rump	62	77.5	18	22.5	—	—		

The results of the assessment of acceptability are shown in Table 3. The majority of consumers (75–85%) rated the acceptability of the meat as either good or very good. Striploin and rump was not liked by about 1 and 2.5% of consumers respectively.

Ninety-one consumers compared the strip loin samples with the grilling steak that they normally purchased, 62 the cube roll and 78 the rump. Of those sampling strip loin, 54.9% rated it as better than the steak normally purchased, a further 40.7% rated it about the same and 4.4% considered it worse. For cube roll 40.3% of consumers considered the trial meat better, 58.1% about the same and 1.6% worse. The corresponding values for rump steak were 39.7%, 51.3% and 9.0%.

DISCUSSION

The responses of consumers in this evaluation clearly indicate that meat from Brahman cross cattle finished on *Leucaena* pastures in the Ord River Irrigation Area is of high quality and comparable to

Table 3. Consumer assessment of acceptability for each cut

Number and percentage allocating scores in the range from 1 (very good), 2 (good), 3 (OK), 4 (don't like it) and 5 (strongly dislike it)

Joint	Score for acceptability									
	1		2		3		4		5	
	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)
Strip loin	39	41.9	42	45.2	11	11.8	1	1.1	—	—
Cube roll	22	35.5	31	50.0	9	14.5	—	—	—	—
Rump	15	18.8	45	56.2	18	22.5	2	2.5	—	—

meat they normally purchase from the domestic retail market. *Leucaena* based pastures are of high quality and enable young pastoral cattle to grow fast enough to attain sufficient weight and fat cover at a young age to meet the requirements of these higher priced markets. This production system therefore provides another option for pastoral cattle in the north of Western Australia.

There appeared to be some flexibility in the specifications for carcasses for the domestic retail trade. Although more than half of the carcasses in this trial shipment exceeded 220 kg only 3 out of 49 were rejected as too heavy.

REFERENCES

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