MEAT & LIVESTOCK AUSTRALIA

tips&tools

MSA17 MEAT STANDARDS AUSTRALIA

Maximising eating quality with tropical breed cattle

The effect of tropical breed content on beef eating quality

MSA research has shown that as a single attribute, breed has around 12% effect on eating quality. The major effect is on the striploin, cube roll, tenderloin and oyster blade primals.

As tropical breed content increases, eating quality scores decrease, see Table 1 below for examples of MSA scores, ranging from 0–100.

The effect of tropical breed content on eating quality scores differs according to specific primal cuts. For example, in Table 1, as the tropical breed percentage increases, the eating quality scores for the rump primals barely change. However, the striploin primal score reduces significantly, decreasing to 49 in the 100% TBC animal.

Key points

- All breeds of cattle are eligible for the MSA program.
- Breed content has up to a 12% effect on beef eating quality.
- On farm management of genetics, nutrition and weight gain will maximise eating quality of beef from tropical breed cattle.
- Processors can further improve product by ageing primal cuts for extended periods or using tenderstretch hanging techniques.
- Hump height is measured on the carcase in conjunction with carcase weight to verify or determine the tropical breed effect.

Table 1. The effect of tropical breed content on eating quality scores.

Cut	Hump height and breed example							
	60mm		85mm		95mm		120mm	
	British/Euro (0% TBC)		Santa Gertrudis (38% TBC)		Brahman x British/Euro (50% TBC)		Brahman (100%)	
Tenderloin	79	MSA5	77	MSA5	75	MSA4	72	MSA4
Cube roll	69	MSA4	66	MSA4	65	MSA4	61	MSA3
Striploin	59	MSA3	58	MSA3	55	MSA3	49	MSA3
Rump	55	MSA3	54	MSA3	53	MSA3	51	MSA3

MSA 5 *MSA 4* *MSA 3*

Example animal: Male; no HGP; 270kg HSCW; ossification 170; MSA marbling 330; rib fat 5mm; pH 5.55; Achilles hanging method; grill cooking method and 28 days ageing.

MSA eating quality scores range from 0–100. According to consumer research, scores <46 fail eating quality expectations, therefore are classified as 'ungrades' and may not be sold as MSA certified product.

The tropical breed effect is calculated by measuring hump height in conjunction with carcase weight to verify TBC declared on the MSA vendor declaration.

The cattle breeds stated are examples only.

On farm management to maximise eating quality

To achieve higher returns on farm, producers should focus on meeting the specifications of the processor, to produce the best possible meat eating quality for consumers. Each processor may have specific breed requirements.

On farm management of genetics, nutrition and weight gain can maximise the eating quality of tropical breed cattle.

Nutrition

Cattle should be kept on a rising plane of nutrition for at least 30 days prior to processing. This is a vital stage of cattle production, where set-backs can have a significant impact on meat eating quality.

Ossification

Since northern cattle are generally subjected to more environmental stresses than southern cattle, maturity and ossification occur at a more rapid rate, adversely affecting meat eating quality. Therefore, while the 30 days prior to processing are important, good nutrition right through the life of the animal can slow the rate of ossification, therefore maximising eating quality.

Weight

In order to enhance eating quality, on farm management practices should focus on reaching the optimal weight at the youngest possible age of the animal.

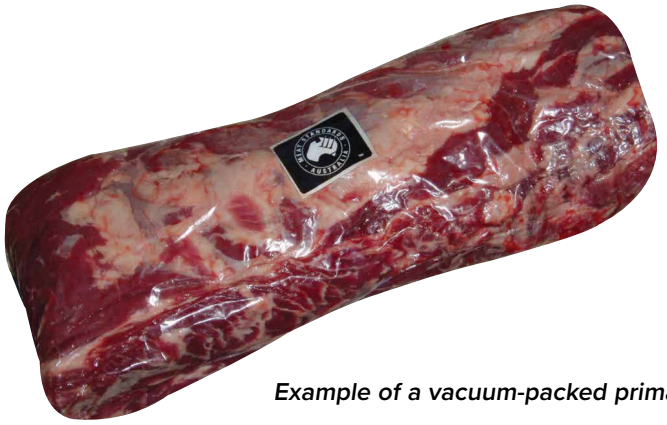
Tropical breed content is beneficial for cattle in harsh climates as they are genetically adapted to heat, can produce on low quality pastures, and are resistant to parasites. However, the introduction of European or British genetics to form composite breeds can significantly improve eating quality while maintaining an environmentally adapted herd.

Post slaughter management

Ageing primals to improve eating quality

Beef from tropical breed cattle can be further improved with ageing. Extended ageing of vacuum-packed primals improves eating quality in many cuts, as during storage in the bag under refrigeration, naturally occurring enzymes continue to break down muscle fibres in the meat. As the ageing period extends, the beef becomes more tender, with the most improvement occurring in the first 21 days.

See Table 2 which shows the effect of the ageing process on primals from an animal with an equivalent 50% tropical breed content. The striploin and rump primals improve to achieve MSA quality after 21 days ageing, while the ageing has minimal effect on the tenderloin.



Example of a vacuum-packed primal.

Table 2. The effect of ageing on eating quality scores.

Cut	Ageing period			
	5 days	14 days	21 days	35 days
Tenderloin	69	70	70	70
Cube roll	50	54	56	59
Striploin	41 (fail)	45 (fail)	48	51
Rump	43 (fail)	45 (fail)	47	50

MSA 5 *MSA 4* *MSA 3*

Example animal: Male; HGP treated; 250kg HSCW; ossification 170; MSA marbling 300; rib fat 5mm; pH 5.55; Achilles hanging method; 90mm hump (50% TBC equivalent) and grill cooking method.

MSA eating quality scores range from 0–100. According to consumer research, scores <46 fail eating quality expectations, therefore are classified as 'ungrades' and may not be sold as MSA certified product.

Tenderstretch

Tenderstretch can be used as an alternative means of hanging the carcase during chilling to improve meat tenderness. The process can reduce the meat ageing period required to achieve the same eating quality result.

Tenderstretching a carcase involves suspension from either the pelvic bone or through the illiosacral ligament, so the leg drops at a 90° angle. This differs from the mainstream method of hanging a carcase by the Achilles tendon.

When a carcase is tenderstretched, a number of muscles are held in a stretched position so they cannot contract, especially muscles in the hindquarter.

Table 3: The effect of achilles and tenderstretch hanging method on eating quality scores after 5 days of ageing.

	Achilles	Tenderstretch
Tenderloin	69	68
Cube roll	50	56
Striploin	41 (fail)	49
Rump	43 (fail)	50

MSA 5 *MSA 4* *MSA 3*

Example animal: Male; HGP treated; 250kg HSCW; ossification 170; MSA marbling 300; rib fat 5mm; pH 5.55; 90mm hump (50% TBC equivalent) and grill cooking method.

A tenderstretch carcase.

Table 4. Tropical breed content for various cattle breeds.

Breed	TBC
Hereford	0%
Angus	0%
Senepol	0%
Charolais	0%
Limousin	0%
Santa Gertrudis	38%
Droughtmaster	50%
Charbray	50%
Brangus	50%
Braford	50%
Brahman	100%

Table 5. Tropical breed content of common crossbreeds.

Crossbreed			TBC
Euro/British	X	Brahman	50%
Santa	X	Droughtmaster	44%
Euro/British	X	Droughtmaster	25%
Santa	X	Braford	44%
Santa	X	Santa x Euro	28%
Angus	X	Santa	19%
Euro/British	X	Santa x Brahman	34%
Brahman	X	Santa x Euro/British	60%
Euro/British	X	Charbray	25%

For more information

Visit www.mla.com.au/msa or contact MSA 1800 111 672.

MEAT & LIVESTOCK AUSTRALIA

Level 1, 40 Mount Street
North Sydney NSW 2059
Ph: +61 2 9463 9333
Fax: +61 2 9463 9393
www.mla.com.au

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