

TIPS & TOOLS

MEAT STANDARDS
AUSTRALIA

The effect of tropical breed content and hump height on beef eating quality

What are tropical breed cattle?

Tropical breed cattle or *Bos indicus* are genetically adapted to tropical environments, excelling in their ability to survive and produce under adverse conditions including heat and poor quality pastures. Tropical breed cattle are also resistant to some parasites. They are an important breed option for the climate of northern Australia. Breeds include the Brahman and crosses of the Brahman such as Brangus, Droughtmaster and Santa Gertrudis.

Temperate or *Bos taurus* breeds include British and European cattle such as Angus, Hereford and Charolais.

The effect on eating quality

MSA research has shown that tropical cattle breeds have a negative impact on the eating quality of many cuts. The major effect is on the striploin, cube roll, tenderloin and oyster blade. In the cuts with high levels of connective tissue – such as the brisket, topside, outside flat and eye round – the effect of tropical breeds on eating quality is reduced.

The tropical breed content of cattle is taken into account by the grading model using a combination of the measurements taken on hump height, carcase weight and sex. All cuts from 100% tropical breed cattle can still meet MSA consumer grade standards if appropriate management strategies are applied throughout the production chain.



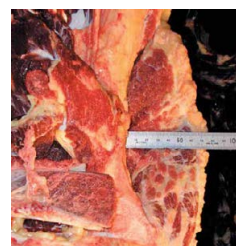
A distinctive physical characteristic of tropical breeds is a hump. In crossbred cattle the hump size relates reasonably to the percentage of tropical breed content.

MSA research has found that eating quality can be calculated by measuring carcase hump height and relating this to carcase weight and sex. This is done within the grading model as the MSA accredited grader enters the hump height for each carcase.

Key points

- Hump height, in conjunction with carcase weight and sex accurately predict eating quality, as influenced by tropical breed content.
- Tropical breed content has a negative impact on the eating quality of many cuts.
- Cuts from tropical-breed cattle can still grade MSA 3, 4 or 5 star.
- Good management is the most important factor in all breeds particularly nutrition and stress minimisation, as well as optimising carcase traits that have a positive impact on eating quality.

How is hump height measured?



Measuring hump height.

Hump height is measured by holding a ruler parallel with the surface of the sawn chine perpendicular to the 1st Thoracic vertebrae. The ruler is moved to the position of the greatest hump width. Hump height is measured by the MSA accredited grader and is recorded in gradients of 5mm.

How can tropical breed content and tropical cattle be managed to improve eating quality?

Since tropical breed content and hump height have a significant influence on eating quality, producers should consider the amount required in their herd for environmental tolerance. The use of *Bos taurus* cattle or cross-breeds where suitable, will enable better grading outcomes. As with all cattle, management practices that result in cattle being heavier and fatter at a younger age will improve grading results. Many successful operators

incorporate feedlot or supplementary feeding strategies to finish a younger and superior quality product (see *MSA Tips & Tools: Maximising eating quality with tropical breed cattle*).

Post-slaughter, many cuts from tropical breed cattle can be improved through the use of tenderstretch and longer ageing (see *MSA Tips & Tools: How tenderstretch affects eating quality*).

The MSA Index allows producers to measure the impact of genetic and management interventions on eating quality, including the use of tropical breed content, as measured by hump height (see *MSA Tips & Tools: Using the MSA Index to optimise beef eating*). As research has shown, an increase in TBC and hump height can impact negatively on the eating quality of many cuts, and as a result, the MSA Index. Hump height has a high relative importance when considering the traits that influence the MSA Index. As hump height increases by 10mm, the MSA Index decreases by around 0.7 units.

What is required of the producer?

Where tropical breed content cattle or their crosses are being consigned for MSA grading, tropical breed content must be declared. This can be done by ticking the appropriate box as to whether cattle contain any tropical breed content, “Yes” or “No”, on the MSA vendor declaration. TBC is simply reported as “Yes”, or, “No” and hump height measurements will be used to determine the most accurate eating quality outcome for each individual carcass.

Although hump height will be used in the model calculations for eating quality, tropical breed content will still be included on carcass feedback sheets; this will be displayed as “X” – Yes, does contain tropical breed content, and “0” – No, contains 0% tropical breed content.

Livestock personnel at processors are trained in determining tropical breed content. The following table lists examples of breeds, their tropical breed content and how this should be declared on the MSA vendor declaration.

Table 1: Tropical breed content for various cattle breeds

Breed	TBC	Tick MSA Vendor declaration	Reported on carcass feedback
Hereford	0%	No	0
Angus	0%	No	0
Senepol	0%	No	0
Charolais	0%	No	0
Limousin	0%	No	0
Santa Gertrudis	38%	Yes	X
Droughtmaster	50%	Yes	X
Charbray	50%	Yes	X
Brangus	50%	Yes	X
Braford	50%	Yes	X
Brahman	100%	Yes	X

Table 2: Effect of tropical breed/hump height

	45mm (0 TBC)		90mm (X TBC)		125mm (X TBC)	
	MQ4	MSA Index	MQ4	MSA Index	MQ4	MSA Index
Tenderloin	77	59.99	72	57.31	68	53.60
Cube Roll	61		57		54	
Striploin	57		50		45	
Rump	53		51		49	

The above data is taken from a standard MSA carcass with the following specifications: 290kg HSCW; male; no HGP-treatment; 150 ossification; 320 MSA marbling; 6mm rib fat; 5.60 pH; 7.1°C loin temp, AT (Achilles tendon) hang; and aged 5-days.

Meat eating score (MQ4) is the predicted eating quality score of the individual cuts in the carcass, based on consumer ratings of tenderness, juiciness, flavour, and overall liking. Each cut is allocated an MQ4 out of 100, and a beef cut must achieve a minimum of 46 points to be allocated an MSA star rating.

Further information

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