

tips & tools



MSA05

MEAT STANDARDS AUSTRALIA

The effect of tropical breeds 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 and Santa Gertrudis.

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

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. This can be seen in the table below where hump height measurements predict tropical breed content.

Hump height (mm)	TBC	Striploin		Eye of knuckle	
		MSA Score	MSA Grade	MSA Score	MSA Grade
120	100%	42	Ungrade	44	Ungrade
90	50%	48	3	46	3
45	0%	55	3	48	3

The above data is taken from a standard MSA carcass with the following specifications: HSCW 240kg, male, AT (Achilles tendon) hang, ossification 150, MSA marbling 270, rib fat 7mm, pH 5.55, loin temp 7.0°C, ageing 5 days, cooking method grill, non HGP-treated.

The above hump height measurements are indicative only.

Key points

- Tropical breed content as a single attribute has a negative impact on the eating quality of many cuts.
- Hump height and carcass weight, together, can accurately estimate the tropical breed effect.
- 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 carcass traits that have a positive impact on eating quality.

The tropical breed content of cattle is taken into account by the grading model in combination with other factors. All cuts from 100% tropical breed cattle can still meet MSA consumer grade standards if appropriate management strategies are applied throughout the production chain.

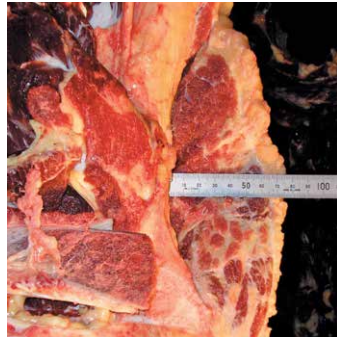
A distinctive physical characteristic of tropical breeds is a hump. In crossbred cattle the hump size relates reasonably to the percentage of tropical breed content.

MSA research has found that an equivalent 'tropical breed effect' on eating quality can be calculated by relating the carcass hump height to carcass weight. This is done within the grading model as the MSA accredited grader enters the hump height for each carcass.



How is hump height measured?

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. It is primarily used to verify the tropical breed content indicated on the MSA vendor declaration.



Measuring hump height.

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

Since tropical breed content has a significant influence on MSA grading, 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 compliance. 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*).

What is required of the producer?

Where tropical breed content cattle or their crosses are being consigned for MSA grading, the tropical breed content must be declared. This can be done by ticking the appropriate box representing the TBC of the group on the MSA vendor declaration. If the mob being consigned has varying levels of tropical breed content, the highest TBC in the mob is declared. For example, if a lot of cattle are mainly Hereford (0% TBC) and Hereford-Droughtmaster crosses (25% TBC) with a few Braford (50% TBC) in the mob, the vendor selects the highest TBC as 50%.

Hump height measurements will be used for verification of the declared tropical breed content and to determine the most accurate eating quality outcome.

It is recommended where possible, that cattle are consigned in groups of similar TBC to get the best grading result, as they cannot be drafted after arriving at the abattoir.

Abattoir livestock personnel are trained in determining tropical breed content. The following table lists examples of breeds of cattle and their tropical breed content declaration.

Table 1 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 2 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

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