

Producing high-quality domestic beef

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INTRODUCTION

Producers of high-quality domestic beef require clear incentives from the market in order to develop on-farm management strategies to meet the needs of consumers. Extensive research by Meat Standards Australia (MSA) into consumer demands has defined the key parameters for beef as: **animal growth rate, breed and intramuscular fat (marbling)**. Live cattle specifications are set with the above requirements in mind and may include live weight, fatness, age and breed.

The value of a beef cut is commonly set at the wholesale level by carcass pricing systems or price grids. The value of a carcass then sets a clear target, or incentive, for the live cattle producer.

Production decisions such as feeding and finishing strategies can heavily influence premiums for beef of higher eating quality.

MEETING SPECIFICATIONS

In meeting the specifications for a high quality

domestic beef carcass, producers may need to supply their product with set levels of quality. Producers following a Critical Control Point (CCP) approach need to ensure the live animal and carcass meets minimum standards at various points in the production chain.

In summary, carcass values may be set at the following stages in the beef marketing chain:

1. Initial value of a hot carcass on the slaughter floor
2. Value of a chilled carcass 24 hours after slaughter
3. A chilled and MSA-graded carcass 24-hours post slaughter

The following example details a set of specifications for a beef carcass, including carcass weight and rump (P8) fat (see Table 1, below). In this example, prices are offered on a base of \$2.40 (240c) per kg Hot Standard Carcass Weight.

Stage 1: Initial value of a hot carcass on the slaughter floor

The base price offered varies according to current market prices or individual contract. The price adjustment (c/kg) is as follows:

Table 1. Typical beef company trading grid (hot carcass)

Hot standard carcass weight (kg)	P8 fat (mm)				
	0-2	3-5	6-12	13-17	>17
160-180	-40	-20	-10	-20	-30
181-200	-40	-10	-5	-20	-30
201-220	-40	-5	0	-10	-30
221-240	-40	-5	0	-20	-30
241-260	-40	-10	0	-20	-30
261-280	-40	-10	-10	-20	-30

Note: The optimum price of 240c/kg requires a carcass weight in the 201 to 260 kg range with 6 to 12 mm fat. This is an example only. Check with your processor for their most current trading grid.

Carcases that have met this requirement will then be valued with the following price schedule used for the chilled carcase (see Table 2). The key criteria are sex, muscle score, meat colour, fat colour, bruising and dentition. Again, these values are set against the base price of 240c/kg.

Stage 2: Value of a chilled carcase 24-hours post slaughter

Table 2. Additional assessment criteria (chilled carcase)

Criteria	Price adjustment
Sex	
Male	0
Female	-5
Carcase muscle score	
A	+5
B	+5
C	0
D	-20
E	-40
Aus-Meat meat colour	
1A-3	0
>3	-40
Aus-Meat fat colour	
0-3	0
>3	-20
Bruising	
Nil	0
1	-10
2 or more	-60
Dentition	
0 teeth	+10
2 teeth	0
>4 teeth	-40

Acceptable carcases are those achieving a nil or positive price adjustment.

Table 3. Meat quality payment groups based on (MSA) grading of individual cuts derived from a beef carcase.

Payment group	Number of cuts	MSA grade	Payment
Group 1	2 or more	5 star	+30
	3 or more	4 star	
	13 or more	3 star	
Group 2	1 or more	5 star	+20
	3 or more	4 star	
	7 or more	3 star	
Group 3	0	5 star	+10
	2 or more	4 star	
	no less than 6	3 star	

DISCLAIMER

The information contained in this publication is based on knowledge and understanding at the time of writing (October 2002). However, because of advances in knowledge, users are reminded of the need to ensure that information upon which they rely is up to date and to check currency of the information with the appropriate officer of New South Wales Department of Agriculture or the user's independent adviser.

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Stage 3: Value of a chilled and MSA-graded carcase 24-hours post slaughter

Meat quality payment groups (see Table 3) are set by individual wholesalers based on the demand of their customers.

In this example, a premium per kilogram is paid to all product meeting MSA specifications. Payments will increase according to the number of cuts meeting 3, 4 and 5 star grades.

PRODUCING HIGH-QUALITY DOMESTIC BEEF

In the above example, producers receive a greater return by producing cattle to comply with MSA eating quality standards.

How could a producer optimise carcass price and quality outcome?

1. Supply carcasses to weight and fat requirements (201 – 260 kg Hot Standard Carcass Weight, 6–12 mm P8 fat)

Plus

2. Supply steers in preference to heifers, ‘A or B’ muscled, 0 (milk) teeth, meat colour 1a-3, fat colour 0-3.

Plus

3. Aim for cuts to meet MSA Group 1. Management decisions that can improve eating quality include:

- Monitoring growth rate (to meet weight for maturity and ossification targets)
- Breed type (to meet *Bos Indicus* requirements)
- Selecting appropriate maturity patterns (to meet WAM – weight at maturity – considerations and fat distribution across the major primals)
- Genetics within breed (marbling is a requirement for this payment group. New genetics may be selected on EBVs (estimated breeding values) for IMF (intramuscular fat content)

In order to achieve Group 1 payment, a carcass would need to achieve the target Ossification Score and Aus-Meat marble scores in Table 4, and the corresponding whole of life average daily gain (ADG).

Note: MSA-assessed cattle must comply with all MSA Quality System requirements.

MSA uses a carcass grading assessment to determine the eating quality standard of the carcass and individual cuts.

It should be noted that as ossification scores increase and growth decreases, marbling must increase in order for this product to grade with sufficient number of cuts for payment Group 1.

Table 4. MSA carcass grading requirements for payment group 1

Ossification range	Aust-Meat marble score	Whole of life ADG (WAM)
100–140	2	0.82–1.29
140–150	3	0.73–0.82
160–170	4	0.60–0.66

Be aware that, biologically, the combination of high marbling levels at a low ossification score can be difficult to achieve.

Producing cattle to meet this example of MSA group 1

Pasture based cattle production systems

Pastures need to provide a target whole of life daily gain that meets a weight for age or ossification requirement.

What pastures can supply this?

Pastures must be of a high quality (better than 68% digestibility) and no less than 2600 kg DM/ha. Such a pasture should have at least 15% legume. The pasture should also be kept within the leafy vegetative phase, or Phase 2, of growth.

In many cases the level of animal growth or fat deposition (for example, marbling) may not be achievable from pasture alone. Growth setbacks can affect carcass ossification scores. Producers must therefore be prepared to supplement during feed gaps or have an alternative finishing strategy in place.

Producers may choose to target a high live weight gain (>0.80 kg/day). This approach produces beef carcasses with lower ossification (maturity) scores and lessens the need for higher levels of marbling.

Grain finishing option

Research has established that feedlot cattle have higher marble scores than pasture finished cattle at the same weight. If growth setbacks are likely, or a higher level of marbling is required, an option is to incorporate a grain-finishing regime.

In addition, growth rates that are too high may result in cattle becoming over-fat. While this growth may assist in meeting a marbling requirement, it may reduce the carcass price due to fat penalties.

Producers should ensure that:

1. The cattle being prepared have the genetic propensity to marble; and,
2. The cost of ensuring animal growth is not greater than the returns being offered.

**What is important
is animal growth rate!**

Managing for high growth rates

Beef producers targeting MSA eating quality specifications will need to ensure cattle achieve a minimum whole of life daily gain. Pastures should be managed so they do not fall below 65% digestibility or below 1500 kg DM/ha. Pastures that suit this target should be maintained in Phase 2, with at least 15% legume content.

If pasture supply is lacking in available quantity or quality affecting the whole of life target gain, several options can be considered. These include:

- **Supplementing** animals to minimise the effects of the feed gap. Options include using silage; sowing forage crops and supplementary feeding in the paddock.
- **Nutritional management of cows** ensuring significant growth checks in calves are avoided pre-weaning
- **Allow animal growth to slow** post weaning and, when adequate nutrition is available, manage pasture so that digestibility and availability are maximised. This will encourage compensatory growth to occur.
- If it is planned to utilise the effects of **compensatory growth**, graziers should consider the implications for compliance with carcass fat requirements.
- **Consider grain finishing cattle.** Again, producers will need to consider the effects that maturity pattern as well as pre and post weaning growth may have on carcass fatness.

CONCLUSION

The key to success in producing high quality domestic beef products is to clearly identify customer specifications. Currently, domestic eating quality standards are set by Meat Standards Australia and detail requirements for individual beef cuts.

The value of a beef animal can be set at various levels in the beef marketing chain. If the focus of the producers is on achieving an optimum return for a high quality product, the beef carcass will be required to meet strict customer requirements.

Customer specifications dictate the objectives for livestock management. By incorporating the principles of animal growth and nutritional management, producers can better target these specifications.

Further information

For more information on MSA, see <http://www.mla.com.au>

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