

3.0 Lamb Evaluation Carcases and primals

Version 6.1 May 2025

3.1 Lamb carcase evaluation

There are three broad attributes of a lamb carcase that contribute to its suitability to a given market specification or to a customer's expectation. These are grouped as:

- Trimness
- Muscularity
- Quality

When evaluating carcases according to the above factors, it is important to consider the customer that the carcase will be supplied to. Market specifications are determined by the customer and hence carcases should be produced and evaluated to ensure conformance to the specifications.

There is not any one carcase trait that makes an ideal product. When evaluating carcases, the above attributes should be considered independently and then combined to produce an overall evaluation outcome.

The AUS-MEAT definition of a lamb carcase is, a female or castrate or entire male ovine that has 0 permanent incisor teeth in wear (Check Sheep producers council website for details).



3.2 Lamb carcase yield

The leanness or trimness of a carcase will ultimately influence the yield of a carcase and hence profitability. Leanness will influence time spent trimming a carcase to customer specifications and will affect the saleable retail yield.

The highest yielding carcases are both heavily muscled and lean while the lowest yielding carcases tend to be lightly muscled and over fat or poorly finished and both lean and lightly muscled.

Carcase leanness is influenced by the following factors which require consideration when evaluating a carcase.

- Fat coverage
- Fat distribution
- Sex

3.2.1 Fat coverage

For a lamb to meet MSA requirements, they must have a minimum fat score 2, or 6mm at the GR site.

Sufficient fat coverage is necessary on a carcase to:

- Minimise carcase dehydration which can result in yield losses
- Protect muscles from severe chilling regimes that can result in muscle toughening.
- Prevent discolouration (blackening) during prolonged chilled storage

The best indication of carcase fatness is fat depth over the middle of the eye muscle. As this is difficult to measure (or assess) in a whole carcase, the best practical site for objective measurement is the GR site. The GR site is defined as: *11 cm from the midline over the 12th rib (GR site).*

GR measurements then determine the AUS-MEAT fat class a carcase falls into. Figure 18 illustrates the various fat classes, with Class 1 being the leanest and Class 5 the fattest. Carcases of fat score 2 and low 3 would yield the most acceptable subcutaneous fat coverage over retail cuts. These classes would ensure adequate carcase coverage as well as minimal trimming requirements.

In current Aus Meat trim specs, the majority of cuts for lambs' class 1 and 2 require no major trimming to meat market specifications. These lambs are considered to have equal overall trimness and hence no overall trimness advantages between these lambs.

Overall trimness should be taken into account once a lamb hits and exceed class 3.

AUSMEAT fat classes for sheep meat

The figure below illustrates the various fat classes, with Class 1 being the leanest and Class 5 the fattest.



Class 2 (GR ≤ 10mm):

- Optimal trimness
- Requires minimal or no trimming
- Better overall yield and processing efficiency

Class 3 and above (GR > 10mm):

- Excessive fat cover
- Requires trimming, increasing labour and waste
- Reduces saleable meat yield and cost efficiency

GR measurements then determine the AUS-MEAT fat class a carcase falls into.



Category	Dentition	HSCW (kg)	Fat Score	GR
Sucker lamb (milk fed) or Young lamb *YL*	0	≥ 16kg	≥2	<mark>≥ 6mm</mark>
Lamb *L*	0	≥ 18kg	≥2	<mark>≥ 6mm</mark>
Hogget *H*	1 –2	≥ 18kg	≥2	<mark>≥ 6mm</mark>
Mutton *M*, *W*, *E*	> 1	≥ 18kg	≥2	≥ 6mm

Below is an example of a lamb with adequate fat coverage, and one with inadequate fat coverage. A lamb with this inadequate fat coverage would be placed last in a class of lamb carcases.



Inadequate



3.2.2 Fat distribution

The yield of saleable meat in a carcase is primarily affected by the fatness of the carcase in relation to its weight. The thickness and distribution of external fat on the carcase (subcutaneous fat) is an important factor in carcase yield. At the same weight, a fat carcase will have a lower yield than a leaner carcase.

Other than having a moderate fat cover, carcases should have a normal fat distribution for optimal yields. It is important to be aware that fat is usually deposited last on the leg and shoulder. Points on the carcase to assess include:

- Leg and shoulder ideally a light cover (light bluish colour rather than thick white fat)
- Flank and breast will generally see heavier deposits
- Tail (dock) fat lambs will exhibit a deep fat deposit
- Leg and chump junction
- Kidney and pelvic fat excess channel fat will reduce the yield of a lamb carcase

Breast area



3.2.3 Muscularity

Muscularity of lamb carcases can aid in yield assessment and can potentially be important in determining the saleability of cuts due to shape and size.

Therefore, if two carcases have the same apparent fat measurements and carcase weights the more heavily muscled carcase in the major primal cuts would be more desirable.

Main areas for assessment of carcase muscularity (thickness and depth) include:

- Leg and chump well developed muscle will be displayed through thick and bulging legs, evaluated from front and side observations.
- Loin good loin eye development will be evident through a well-rounded loin
- Shoulder ideally should be well muscled down onto the breast
- Ribs good muscularity will be shown through well fleshed ribs

It is important when assessing muscularity, that this is not confused with the fatness of the carcase.

3.3 Lamb carcase quality

Regardless of leanness and muscling, quality is of paramount importance when assessing carcases for a customer specification.

In lamb carcases, a number of quality factors can be assessed and include:

- Intramuscular fat (IMF)
- Fat colour
- Fat properties (firmness)
- Meat colour

3.3.1 Intramuscular fat

Intramuscular fat (IMF), also known as marbling, is the distribution of fat found within the muscle. IMF is a key driver of eating quality in sheep meat and has a significant impact on the tenderness, juiciness, flavour and overall liking of the product. In lamb IMF is measured in the loin muscle and when assessed for judging it is observed at the cut surface between the loin and rack face. Evenly and finely dispersed IMF is most desirable as it aids in consistency in eating quality for the consumer.



Example of lamb carcase exhibiting a high level of IMF.



Example of a carcase exhibiting a medium level of IMF.



Example of lamb carcase exhibiting a low level of IMF.

3.3.2 Fat colour

White or creamy/white fat is most desirable to consumers. Similar to other red meat, lamb fat can be influenced by an animal's diets. However, variation in fat colour of lamb carcases tends not to be a significant problem in the Australian domestic market given the young age of lamb.

Fat colour will not affect eating quality of sheep meat but can influence the eye appeal to consumers as a retail cut.

3.3.3 Fat properties

As with beef carcases and primals, the fat should be firm on the chilled carcase. Fat on lamb carcases can range from being dry and firm to exhibiting flaky characteristics through to being soft and oily, which is undesirable.

Assessment of meat quality of a lamb is primarily assessed using IMF, however a limited indicator can be predicted by assessing the degree of feathering between the ribs. Feathering can be described as the white streaks of fat between the rib bones. A high degree of feathering is thought to be an indication of higher marbled lean within the carcase.

In addition to this, flank streaking is also a limiting indicator of marbling in lamb and is characterised as white streaks of fat in the internal exposed lean/flank.

3.3.4 Meat colour

Meat colour assessment is observed at the quartering site of the lamb carcase in the class. It can also be assessed in the flank and thoracic areas.

A bright reddish pink is the most desirable meat colour. Dark colour is undesirable to consumers and can indicate poor eating quality. An explanation of the important of meat colour can be found in the beef carcase evaluation section.





An example of a lamb carcase class with carcases quartered at the rack-loin junction



3.4 Evaluating lamb carcases

Emphasis: Lambs are to be judged on value. Yield (muscularity and leanness) followed by quality.

If carcases are deemed similar for yield, look at quality traits to differentiate placings.

Areas of evaluation for lamb carcases

- Leg
- Chump
- Loin
- Shoulder
- Dock
- Flank
- Kidney and pelvic area
- Breast
- Cut surface of the rack-loin junction



When judging a lamb carcases class, please take into consideration Meat Standards Australia (MSA) minimum requirements for Lamb and Sheepmeat. If a carcase is judged to have a fat score 1 (one), it therefore fails MSA minimum requirements and should be placed last in the class. This is because it may not meet the consumer expectations for eating quality attributes of tenderness, juiciness and flavour. Reduced fat cover over the carcases may lead to cold shortening issues.

Evaluation terminology for lamb carcases

Muscling	Trimness	Quality
Leg	Less fat over the:	Flank streaking
Thicker	Loin	Greater amount
Wider	Loin edges	More extensive
Longer	• Leg	
Plumper	Sirloin	Lean
More bulging	Rack	Colour in flank region
More muscular	Shoulder	Brighter
1853/11.11.61	Dock	More youthful
Sirloin	Breast	More reddish pink
More prominent	Flanks	
Thicker	Elbow pockets	Ribs
Plumper	Crotch	Feathering
More bulging		Redder
Fuller		Rounder
More muscular		
		Fat colour
Loin		Firmer
Thicker		Whiter
Fuller		
More muscular		IMF
		Fineness
Rack		Evenly distributed
Thicker		More abundant
Fuller		
More muscular		
Shoulder		
Thicker		
Wider		
Deeper		
More muscular		
More bulging		
Shank		
Shorter		-

Lamb carcase terminology



Examples of questions used for lamb carcase evaluation classes in ICMJ contest

Questions asked may be based on:

- 1. Observations over the whole class (e.g. how many males in the class?)
- 2. Observations made on the extremes (e.g. which carcase had the most blueing in the leg and loin?)
- 3. Comparisons between carcases (e.g. Between Carcase 2 and 3, which displayed the reddest, roundest ribs?)
- Which carcase has the highest visible IMF in the loin eye face?
- Which carcase had the most fat over the loin eye?
- Which carcase was fattest over the dock?
- Which was the highest yielding carcase in the class?
- Between 1 & 2, which carcase displayed the most fat in the crotch region?
- Between 1 & 3, which carcase had the narrowest, least muscular shoulder?
- Between 1 & 4 which carcase displays the most fine and evenly distibuted IMF?
- Which carcase had the poorest muscled leg?
- Which carcase displayed the most blueing over the leg and loin?
- Between 2 & 4, which carcase displayed the most fat in the flank pocket?
- Between 1 & 3, which carcase had the least fat over the breast?
- Which carcase displayed the reddest, roundest ribs?
- Which carcase had the lightest coloured lean in the flank region?
- Between 1 & 4, which carcase is trimmer over the breast?
- Which carcase has the greatest degree of secondary flank streaking?
- Between 2 & 3, which carcase has more muscling through the loin and rack?
- Which carcase is trimmest through the flank pocket?
- Between 3 & 4, which carcase is fatter over the dock?
- Which carcase is trimmest over the sirloin?
- Between 3 and 4, which carcase was trimmest over the loin, rack and shoulder?
- Between 1 and 4, which carcase was fattest over the breast?
- Which carcase displayed the least cod and udder fat?
- Between 3 and 4, which carcase has the most defined loin edge?
- Which carcase would yield the highest percentage of closely trimmed retail cuts?
- Which carcase displayed the most fat in the flank pocket and flank region?
- Between 1 and 4, which carcase had the thickest, plumpest, most muscular shank?
- Between 3 and 4, which carcase displayed the most fat and least definition through the sirloin and loin?
- Which carcase displayed the most feathering in the class?
- Between 1 and 4, which carcase displayed the greatest degree of blueing over the shoulder?

3.5 Lamb primal evaluation

When carcases are broken down for the retailer or consumer, they are split into primals. The same broad attributes that are used in beef carcase evaluation are also used when appraising lamb primals. These are grouped as:

- Eating Quality
- Yield most suitable combination of trimness and muscling

Importantly, there are differences between the evaluation of primals within a carcase. This difference is dependent on the relative market value of each primal and therefore the importance of quality and yield for each primal.

There is not any one trait that makes an ideal product. When evaluating lamb primals, the above attributes should be considered independently in combination with the market suitability of the individual primal.

Key points for evaluating/judging lamb primals

You MUST know your primal face names – they are critical for answering questions. There will be 4 loins or racks per class.





3.5.1 Lamb loins

Emphasis: Quality followed by yield (muscling plus trimness)

Loins are a high value cut for Australian and export markets. There will be 4 loin saddles in a class.

Areas of evaluation for loins:

- Loin eye muscularity, trimness, quality
- Sirloin face muscularity, trimness, quality
- Back muscularity
- Tenderloin muscularity



Evaluation terminology for lamb loins

Muscling	Trimness	Quality
Loin eye	Less fat over the:	Marbling in the loin eye
Larger	Loin eye	and sirloin face
More symmetrically	 Sirloin face (top and 	Higher degree
shaped	bottom)	Greater amount
	Back	 More finely dispersed
Sirloin face		200 80
Greater area of exposed		Colour of lean in loin eye
lean		and sirloin face
Deeper		Brighter
Wider		(30)
Meatier		
Larger		Firmer lean in loin eye and sirloin face
Back		2 and Constant in a construction with instantisms
Plumper		Finer textured lean in loin
Wider		eve and sirloin face
More muscular		
Fuller		Fat
Longer		Whiteness
		Firmness
Tenderloin		
Larger	2	



3.5.1 Lamb racks

Emphasis: Quality followed by yield (muscling plus trimness)

Areas of evaluation for racks

- Loin eye muscularity, external trimness, quality
- Blade face muscularity, trimness, quality
- Rib ends external trimness
- Back trimness and yield

Evaluation terminology for lamb racks

Muscling	Trimness	Quality
Loin eye	Less fat over the:	Marbling in loin eye and
Larger	Loin eye	blade face
More symmetrically	Blade face	Higher degree
shaped	Back	Greater amount
	Rib ends	 More finely dispersed
Blade face		
Greater area of exposed		Colour of lean in loin eye
lean	Less seam fat in the	and blade face
Deeper	blade face	Brighter
Wider		and sold a solution of the solution of
Meatier		Firmer lean in loin eye
Larger eye of the blade		and blade face
face		
1445 - AM		Finer textured lean in loin
Back		eye and blade face
Plumper		2000
Wider		Fat
More muscular		Whiteness
Fuller		Firmness
Longer		





4.0 Pork Evaluation Carcases and primals

Version 6.1 May 2025

4.1 Pork carcase evaluation

There are attributes of a pork carcase that contribute to its suitability to a given market specification or to a customer's expectation. These are grouped as:

- Yield (trimness and muscling)
- Eating Quality

When evaluating carcases according to the above factors, it is important to consider the customer that the carcase will be supplied to. Market specifications are determined by the customer and dictate how carcases should be produced and assessed to ensure compliance.

Evaluation must balance both yield and eating quality, taking into account the end-use of the product.

There is not any one carcase trait that makes an ideal product. When evaluating carcases, the above attributes should be considered independently and then combined to produce an overall evaluation outcome.



4.2 Pork carcase muscularity

Muscularity of pork carcases can aid in yield assessment and can potentially be important in determining the saleability of cuts due to shape and size.

It is important to be able to distinguish between the thickness, plumpness and firmness of a carcase is due to muscle development rather than fat deposition. This differentiation ensures accurate evaluation of carcase quality.

Main areas for assessment of carcase muscularity include:

- Legs
- Hams
- Loin
- Shoulder



Thick and well-developed muscling in these regions directly correlates to higher saleable retail yield.

The following table provides an indication of the difference in carcase attributes between thick and thin muscularity:

Point of assessment	This muscling/	This muscling/	Average	Thin muscling/	Thin muscling/
	low fatness	high fatness	muscling	low fatness	high fatness
Legs	Thicker	Slightly thicker	Equal	Thicker in centre	Thinner
	than loin	than loin	thickness	of legs than loin	than loin
Loin	Appear full and well-rounded	Flat over the loin	through legs and loin	Appear sloping and flat	Thicker than legs
Shoulder				Thicker than loin	

Assessment of pork carcase muscularity

It is more desirable to produce carcases with thick muscling and low fatness to yield the highest percentage of saleable retail cuts that require minimal trimming.

4.3 Pork carcase trimness

The trimness of a pork carcase, in particular external fat will ultimately influence the yield of that carcase and hence profitability. Leanness will influence time spent trimming a carcase to customer specifications and will affect the saleable retail yield.

The highest yielding carcases are both heavily muscled and lean while the lowest yielding carcases tend to be lightly muscled and over fat or poorly finished and both lean and lightly muscled.

The following areas are points to evaluate when assessing a carcase for trimness in determining the ability of the carcase to yield the greatest amount of lean saleable retail cuts:

- Collar fat Located on the inside of the leg area; excess fat here can reduce yield.
- Internal belly edge Measured for fat thickness; excessive fat can require additional trimming during processing.
- Sternum Also measured for fat thickness; excessive sternum fat may reduce primal and secondary cut yields.

4.4 Pork carcase quality

In pork carcases, quality factors can be assessed using the following: (NB: carcases in the Australian ICMJ contest are typically split or quartered, however this is not guaranteed).

- Meat colour and texture
- Fat properties of external fat coverage
- Skin
- Meat quality (intramuscular fat)

4.4.1 Meat colour and texture

The colour and texture of the exposed lean sometimes visible in the collar area should be:

- Fine textured.
- A bright greyish pink colour is highly desirable.
- Pale coloured soft watery lean is severely criticised.
- Dark coloured lean is undesirable.

In a carcase, the lean can be assessed by viewing the lumbar lean or exposed lean around the collar.

Pork carcases can exhibit a meat quality phenomenon called PSE (pale, soft and exudative meat). PSE results from rapid post-slaughter pH decline while the carcase is still warm, typically caused by stress or improper chilling.

PSE meat is a problem at retail as it exudes large volumes of drip in the retail pack, which is unsightly to the consumer. From a food service perspective, PSE meat has lower cooking yield, reducing its value and suitability for commercial use. PSE meat is a major problem in pig meat.



Example showing lumbar lean.

4.4.2 Fat properties

The exterior fat covering SHOULD be:

- Firm
- White coloured
- Dry to touch
- Dry in appearance

and should NOT be:

- Soft
- Oily
- Discoloured (undesirable)

4.4.3 Skin

The skin of a high-quality pork carcase should be smooth and fine grained, this contributes to ease of processing and enhances the appearance of the finished product.

4.4.4 Meat quality

Assessment of meat quality of a pork carcase is somewhat limited but can be predicted by assessing the degree of feathering between the ribs. Feathering can be described as the white streaks of fat in the meat between the bones.

A high degree of well-distributed feathering is an indication of intramuscular fat, contributing to juiciness, tenderness and flavour.



4.5 Determining gender of pork carcases

4.5.1 Male

- Rough fat surface in the naval edge and the belly pocket along the split edge of the body where the preputial sheath was removed.
- Larger exposure of collar fat where scrotum has been removed.

4.5.2 Female (gilt)

- Smooth, more evenly distributed fat surface in the naval edge and belly pocket along the split edge of the belly.
- Lack of scarring/tissue associated with the removal of the sheath or scrotum.
- More symmetrical appearance in the belly region.

Female



Male



4.6 Evaluating pork carcases

Emphasis: Yield (muscularity and trimness) followed by quality

Areas of evaluation for pork carcases

- Ham
- Sirloin
- Mid-loin
- Rib-loin
- Shoulder
- Belly
- Butt collar
- Ribs



Evaluation terminology for pork carcases

Muscling	Trimness	Quality
Ham	Less fat over the:	Ribs
Thicker	Collar	Feathering
Wider	 Belly pocket 	
Longer	 Navel edge 	Lean
Plumper	Sternum	Firmer
More bulging		Brighter
More muscular		
Sirloin		
More prominent		
Thicker		
Plumper		
More bulging		
Fuller		
More muscular		
NATIONAL DIST.		
Inicker		
Fuller		
More muscular		
Bib Loin		
Thicker		
Fuller		
More muscular		
More masouri		
Shoulder		
Thicker		
Wider		
Deeper		
More muscular		
More bulging		
Shank		
Shorter		



Examples of questions used for pork carcase evaluation classes in ICMJ contest

- Which carcase was fatter over the lumbar lean?
- Between carcase 1 & 3, which had the largest Gluteus medius muscle?
- Which carcase displayed the least amount of fat along the navel edge?
- Between 1 & 2, which carcase had the plumper, fuller ham partially due to fat?
- Which carcase had the most shapely, heavily muscled loin?
- Which carcase displayed the amount of feathering?
- Which carcase was the lowest yielding?
- Which carcase had the most fat in the elbow pocket?
- How many gilts in the class?
- Between 3 & 4, which carcase had the plumper, more muscular, bulging shoulder?
- Which carcase has the greatest area of lumbar lean?
- Which carcase is the highest yielding?
- Between 1 & 4 which carcase has the more muscular bulging ham?
- Between 2 & 3, which carcase is trimmer over the 1st rib?
- Which carcase is fattest down the navel edge and sternum?
- Between 1 & 2, which carcase has the leanest most defined sirloin/loin junction?
- Which carcase is leanest over the clear plate?
- Which carcase is trimmest over the last lumbar?
- Which carcase is fattest through the naval edge and belly pocket?
- Between 1 and 4, which carcase has the fuller more muscular ham?
- Which carcase is leanest alongside the lumbar lean?
- Between 2 and 3, which is trimmest at the last rib?
- Between 1 and 2, which displays the least amount of fat in the collar region?
- Which carcase has the most feathering?
- Which carcase will produce the highest percentage of closely trimmed retail cuts?
- Between 2 and 3, which has the plumper more muscular bulging shoulder?
- Between 2 and 4, which carcase had the most fat at the first rib?
- Which carcase had the greatest area of exposed lumbar lean?
- How many males were in the class?
- Which carcase had the flattest, lightest muscled shoulder?
- Which carcase displayed the least amount of fat along the navel edge?
- Between 1 and 3, which carcase was trimmer at the last rib?
- Which carcase displayed the least amount of feathering?
- Which carcase had the most fat in the belly pocket?

4.7 Pork primal evaluation

When carcases are boned, they are broken down into primals. The same broad attributes that are used in carcase evaluation are also used when appraising pork primals. These are grouped as:

- Yield (trimness and muscling)
- Eating quality

Importantly, there are differences between the evaluation of primals within a carcase. This difference is dependent on the relative market value of each primal and therefore the importance of quality and yield for each primal.

There is not any one trait that makes an ideal product. When evaluating pork primals, the above attributes should be considered independently in combination with the market suitability of the individual primal.

Key points for evaluating/judging pork primals

You MUST know your primal face names – they are critical for answering questions.



4.7.1 Fresh Hams (Pork Legs)

Emphasis: Yield (muscling plus trimness) followed by quality

Areas of evaluation:

- Centre section muscularity and depth
- Forecushion Trimness
- Butt face exposed lean
- Heel muscling and trimness
- Stifle muscling and trimness

Evaluation terminology for hams

Trimness	Muscling	Quality
Less fat over/along/under:	Centre section	Colour of the lean in the butt
Forecushion	Larger	face, secondary muscles
Butt face	Plumper	 More reddish pink
	Deeper	 Less two toned
	Broader	
Less seam fat in the butt face		Firmer lean in the Butt face
	Cushion	
Less collar fat	Deeper	More marbling in the butt face
	Broader	
		Texture
	Heel	Coarse and stringy
	Plumper	Firm and fine
	Butt face	Fat
	Deeper	Whiteness
	Wider	Firmness
	Meatier	which is a second statistics of
	Comparative size of exposed	
	muscles	





Examples of questions used for fresh ham evaluation classes in ICMJ contest

- Which ham has the most collar fat?
- Which ham has the most marbling in the exposed face?
- Which primal displays the least uniform/most variation in meat colour in the butt face?
- Which ham has the firmest and most favourably textured lean?
- Which is the highest yielding ham?
- Which ham has the most fat over and alongside the butt face?
- Between 2 and 4, which ham has the more muscular cushion?
- Which ham is trimmest over and alongside the forecushion?
- Which ham has the most seam fat in the butt face?
- Which ham is leanest in the heel section?
- Which ham displayed the firmest lean in the butt face?
- Between 1 and 3, which ham had the deepest, plumpest centre section?
- Between 1 and 3, which had the plumper more muscular heel?
- Which ham would be the highest yielding in the class?
- Between 2 and 4, which ham displayed the least collar fat?
- Which ham had the shortest shank in the class?
- Between 2 and 4, which ham displayed a deeper, wider centre section, partially due to fat?
- Between 2 and 4, which ham displayed the most fat over the forecushion?
- Between 1 and 3, which ham displayed the finest textured lean in the butt face?



4.7.2 Evaluating Pork Loins (Centre Cut)

Emphasis: Yield (muscling plus trimness) followed by quality

Areas of evaluation:

- Blade face muscularity, trimness and quality
- Chine muscularity
- Back muscularity and trimness
- Rib ends trimness
- Sirloin face muscularity, trimness and quality

Evaluation terminology for pork loins

Trimness	Muscling	Quality
Less fat over the:	Blade face	Colour of lean in the loin eye (both
Blade face	More exposed lean	faces), secondary muscles, gluteus
Back	Deeper or wider	medius, tenderloin or entire faces
Lower rib	Loin eye – larger, more	More reddish pink
Rib ends	symmetrically shaped	Less two toned
Sirloin face	Secondary muscles – larger	
		Firmer lean in the loin eye (both
Less seam fat in the blade	Back	faces), secondary muscles, gluteus
and sirloin faces	Deeper chined	medius, tenderloin or entire faces
	Wider backed	(blade or sirloin)
Less fat in the lip region	Longer loin	
		Finer lean in the loin eye (both faces),
Less kidney fat	Sirloin face	secondary muscles, gluteus medius,
	More exposed lean	tenderloin or entire faces (blade or
	Deeper or wider	sirloin)
	Gluteus medius - larger	More marbling in the loin eye (both
	Loin eye – larger	faces), secondary muscles, gluteus
	Tenderloin – larger	medius, tenderloin or entire faces
		(blade or sirloin)
		Fat
		Whiteness
		Firmness



Examples of questions used for pork loin evaluation classes in ICMJ contest

- Which loin displays the least area of exposed lean in the sirloin face?
- Which loin combined trimness and muscling to the lowest degree?
- Which loin was trimmest over the back?
- Which loin displayed the most marbling in the secondary muscles of the blade face?
- Between 1 & 4, which loin displayed the least fat over the lower sirloin face?
- Which loin displayed the most kidney face in the sirloin face?
- Between 2 & 3, which loin had the largest *Gluteus medius* in the sirloin face?
- Which loin had the most fat over the back and sirloin face?
- Between 1 & 4, which displayed the most uniform colour in the blade face?
- Between 4 & 3, which loin was higher yielding?
- Which loin has the largest tenderloin in the class?
- Which loin has the greatest amount of marbling in the loin eye of the sirloin face?
- Between loins 3 and 4, which loin has the greatest area of exposed lean in the blade face?
- Which loin has the smallest secondary muscles in the blade face?
- Which loin has the softest lean in the blade face?
- Between 3 & 4, which loin has the greatest amount of seam fat in the blade face?
- Between loins 2&4, which displayed the least kidney fat?
- Between 2&3, which loin showed the least uniform colour in the blade face?
- Between primal 1 and 2, which is trimmer over both the blade and sirloin faces?
- Between primals 1 and 3, which has the least fat over the back?
- Which primal exhibits the most seam fat in the blade face?
- Which displays the least desirable lean texture in the blade face?
- Which primal has the most kidney fat?
- Which primal would yield the highest percentage of trimmable fat?
- Between primals 1 and 2, which has the greater area of exposed secondary muscles in the blade face?
- Which primal has the most marbling in the blade face?









5.0 Goat Evaluation



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5.1 Goat carcase evaluation

Goat meat, often referred to as the most widely consumed meat in the world, is popular amongst many, if not almost all ethnic and religious communities. Goat meat is increasingly being seen as a niche and alternative protein source within the Australian domestic market.

The carcase attributes each market requires differ greatly, with carcase traits such as gender, weight, age as well as skin-on or skin-off processing methods contributing to pricing and purchasing decisions.





Skin on goats vs Skin off goats

For many markets, goat is consumed as homogeneous pieces, where the whole carcase (including bone) is cut into smaller pieces, approximately 25mm cubes. These pieces are generally prepared using wet cooking methods. Pieces need to display a good bone to flesh ratio and hence heavier weight carcases > 24kg will generate some pieces of mostly bone and are unsuitable. Carcases under 8kg are also generally unsuitable due to inefficiencies in processing. Here trimness is key and there is little pressure on having inadequate fat. Generally, the less fat displayed the more favourable the carcase.

Other markets of cut- based or whole-body sales prefer adequate fat coverage to seal and protect the carcase, here goats under 20kg tend to be preferred.

The three broad attributes of a goat carcase that contribute to its suitability to a given market specification or to a customer's expectation are grouped as:

- Trimness
- Muscularity
- Quality

5.2 Goat carcase trimness

5.2.1 Fat distribution

Goats physiologically have a higher tendency to lay internal and seam fat over subcutaneous fat compared to their lamb or pork counterparts.

Goat is commonly purchased as a diced bone in product and used in wet cooking methods to achieve the desired mouthfeel and eating quality. For these markets, fat in goat carcass is to be carefully balanced.

Traditionally goats appearing to have a GR depth above 10mm would be unsuitable, with markets preferencing under 5mm. Any goats showing over 20mm gr fat should be placed last when comparing goats for this type of market.

Goats showing no fat but still desirable by many consumers when diced as a bone in product for wet cooking.



Well covered goats, such as the below, are suitable for dry cooking (grill, BBQ etc) and cuts-based sales.

Following current market pressures for a cuts-based goat product (where dry cooking may occur), the preference is for a goat carcass to display a GR depth 5mm or greater with a more consistent and even fat coverage.

Tight pairs can be split on the difference in internal or cavity fat.



5.3 Goat carcase muscularity

Muscularity of goat carcases can aid in yield assessment and can potentially be important in determining the saleability of cuts due to shape and size. The importance of muscularity further extends to when goats are processed as pieces, where poorly muscled goats have a higher bone to flesh ratio and are deemed undesirable.

Therefore, if two carcasses have the same apparent fat measurements and carcase weights, the more heavily muscled carcase in the major primal cuts would be more desirable.

Main areas for assessment of carcase muscularity (thickness and depth) are similar to lamb and include:

- Leg and chump well developed muscle displayed through thick and bulging legs, evaluated from front and side observations. Poorly muscled goat will have shallow legs and display exaggerated concave nature to the leg not dissimilar to dairy muscling in beef judging.
- Loin good loin eye development will be evident through a well-rounded loin.
 Poorly muscled loins will appear to fall away immediately from the spine lacking width and definition.
- Shoulder ideally should be well muscled down onto the breast. Poorly muscled examples will lack width across the shoulder and will "pinch" or narrow drastically into the breast.

It is important when assessing muscularity, that this is not confused with the fatness of the carcase, and this can be determined by the amount of bluing coming through.



Example of underweight poorly muscled goat carcases



The leg muscularity increases in the above carcases left to right

5.4 Goat carcase quality

5.4.1 Sex characteristics

Like lamb, the gender of goats can be differentiated as a hanging carcase through observation the presence or absence of a pizzle stub and through the fat texture of the cod/ udder region.

From a quality point, gender should be observed when differentiating between mature uncastrated males and immature or castrated males.

Uncastrated mature male carcasses can be found to have heavy neck and shoulder development and reduced fat cover, particularly over the forequarter. These carcases can be described as appearing 'bucky'.

This Bucky quality should be seen as inferior when splitting pairs on quality.

5.4.2 Meat colour

Similar to lamb, meat colour assessment is assessed in the flank and thoracic areas. Traditional goat customers prefer bright reddish pink (as is associated with a younger goat) desirable meat colour. Dark colour is undesirable to consumers and indicates a more mature animal, which can have negative impacts on eating quality.



5.5 Evaluating goat carcases

Emphasis: Yield (muscularity and trimness) followed by quality

Similar to lamb and pork judging, there will be 4 goat carcasses in the class.

Areas of evaluation for goat carcases

- Leg
- Sirloin
- Loin
- Rack
- Shoulder
- Shank
- Flank

Evaluation terminology for goat carcases

Muscling	Trimness	Quality
Leg	Less fat over the:	Flank streaking
Thicker	Loin	Greater amount
Wider	 Loin edges 	More extensive
Longer	• Leg	
Plumper	Sirloin	Lean
More bulging	Rack	Colour in flank region
More muscular	Shoulder	Brighter
	Tail	More youthful
Sirloin	Breast	More reddish pink
More prominent	Flanks	
Thicker	 Elbow pockets 	Ribs
Plumper	Crotch	Feathering
More bulging	- Groton	Redder
Fuller		Rounder
More muscular		12.01 20
		Fat colour
Loin		Firmer
Thicker		Whiter
Fuller		
More muscular		
Rack		
Thicker		
Fuller		
More muscular		
Shoulder		
Thicker		
Wider		
Deeper		
More muscular		
More Bulging		
Shank		
Shorter		

Examples of questions used for goat carcase evaluation classes in ICMJ contest

Questions asked may be based on:

- 1. Observations over the whole class (e.g. how many bucky carcases were in the class?)
- 2. Observations made on the extremes (e.g. which carcase had the most blueing in the leg and loin?)
- 3. Comparisons between carcases (e.g. Between Carcase 2 and 3, which displayed the highest degree of muscling in the leg?)
- Which carcase had the most fat over the loin?
- Which carcase was fattest over the tail region?
- Which was the highest yielding carcase in the class?
- How many goats in the class suit a cuts-based market?
- Which carcase suits a whole-body market?
- Which carcase displayed Bucky characteristics?
- Between 1 & 2, which carcase displayed a more heavier muscled leg?
- Between 1 & 3, which carcase had the narrowest, least muscular shoulder?
- Between 1 & 3, which carcase is better suited to a pieces market?
- Which carcase had the poorest muscled leg?
- Which carcase displayed the most blueing over the leg and loin?
- Between 1 & 3, which carcase had the least cavity fat?
- Which carcase displayed the reddest, roundest ribs?
- Which carcase had the lightest coloured lean in the flank region?
- Between 1 & 4, which carcase is trimmer over the breast?
- Which carcase is fattest over the loin?
- How many carcasses suit a wet based or pieces market?
- How many carcases suit a cuts-based market?
- Between 2 & 3, which carcase has more muscling through the loin and rack?
- Which carcase is trimmest through the flank pocket?
- Between 3 & 4, which carcase is fatter over the tail?
- Between 3 and 4, which carcase was trimmest over the loin, rack and shoulder?
- Which carcase displayed the least cod and udder fat?
- Between 3 and 4, which carcase has the most defined loin edge?
- Which carcase would yield the highest percentage of closely trimmed retail cuts?
- Which carcase displayed the most fat in the flank pocket and flank region?
- Between 1 and 4, which carcase had the thickest, plumpest, most muscular shank?
- Between 3 and 4, which carcase displayed the most fat and least definition through the sirloin and loin?
- Which carcase displayed the most feathering in the class?

