MEAT & LIVESTOCK AUSTRALIA

Fact sheet

Lean meat yield percentage:

An introduction for sheepmeat producers

Key points

- ✓ The quantity of lean meat recovered from a carcase is a key profit driver of the sheep industry.
- ✓ Lean meat yield percentage (LMY%) is a way of measuring and comparing the meat yield of carcases.
- ✓ Increasing LMY% helps producers enhance their flock's compliance to carcase grid specifications and also improve feed conversion efficiency.
- ✓ There's a negative correlation between LMY% and eating quality, so balancing them both for an optimum outcome is critical.
- ✓ Producers can improve LMY% while maintaining eating quality through balanced genetic selection.
- ✓ Using feedback from processors can help producers improve the LMY% of their carcases and thereby bolster profitability.

What is lean meat yield percentage (LMY%)?

There are three main tissue types in a carcase: bone, muscle and fat.

LMY% is the proportion of a carcase that is lean meat (muscle), expressed as a percentage.

The amount of fat at the time of slaughter has the largest effect on LMY%. Secondary to this, muscling plays a large roll in LMY%. The amount of bone has a small impact and is related to maturity at point of slaughter.

The LMY% of a carcase is a standard way to compare the lean meat composition of lamb carcases – it does not change depending on the cutting specifications used to market the carcase.

Image 1: A lamb carcase separated into fat, bone and lean meat components

How is LMY% measured?

LMY% is calculated using a prediction algorithm based on hot standard carcase weight and GR tissue depth (fat in millimetres at the GR site, see key definitions).

The higher the hot standard carcase weight and the lower the GR value, the higher the LMY%.

Abattoirs may use different systems to determine LMY% but these systems have all been calibrated against a CT scan – the gold standard system to measure LMY%. This allows lamb carcases to be compared in a standard way.

Image 2: Lamb cuts being CT scanned to measure LMY%

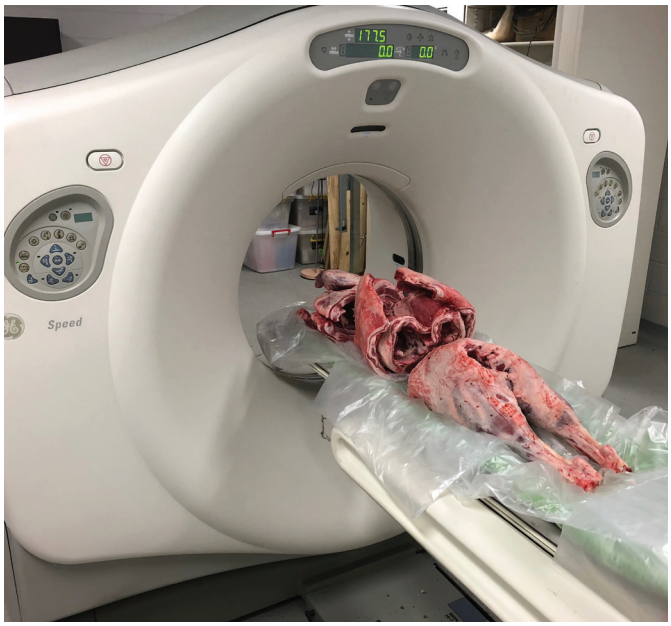
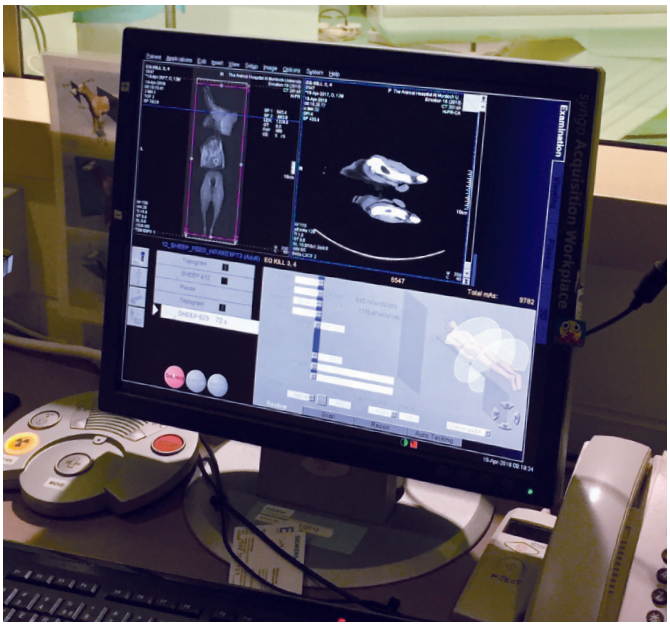


Image 3: The output of the CT scan revealing the LMY%



As more technology comes on board, greater precision and accuracy of measurement will be achieved. DEXA is one of these technologies and is currently being installed in some plants.

How to obtain LMY% data

Producers can access LMY% from their consignments via Livestock Data Link (LDL), provided the processor you use participates in LDL. Some processing companies may also provide LMY% for carcases via their own feedback mechanism.

How to access data in LDL

LDL is a web-based feedback system that provides Property Identification Code (PIC) holders with compliance to grids and carcase performance information based on carcase weight, fat and LMY% on a mob basis. LDL also has the capability to report on an individual animal basis if electronic identification is used.

Before you can begin using LDL, you need to create an account at http://ldl.mla.com.au. You will need your National Livestock Identification System (NLIS) user ID and password.

Once you have created an LDL account, you will be able to access a user manual and tips and tools on how to use the system.

You will only see data from processors participating in LDL.

LMY% figures can be found in the “Carcase Analysis” and “Details” reports, located under the “My Reports” tab of LDL.

Table: LMY% data produced by LDL

Compliance by Gender				
	Male	Female	Unknown	All
No. Head			644	644
No. Condemned			0	0
Total HSCW (kg)			13,954.4	13,954.4
Max HSCW (kg)			30.2	30.2
Min HSCW (kg)			16.4	16.4
Avg HSCW (kg)			21.7	21.7
Max Fat Class			4	4
Min Fat Class			2	2
Fat Class mode			3	3
Min Lean Meat Yield %			55.04	55.04
Max Lean Meat Yield %			60.01	60.01
Avg Lean Meat Yield %			57.33	57.33
Non-compliance count			40	40
Non-compliance cost			$174.44	$174.44
Non-compliance cost/head			$4.36	$4.36

How producers can manage LMY%

The key on-farm practices that influence LMY% are nutrition and genetic selection.

Nutrition

Nutrition affects LMY% by influencing the final weight of the carcase as well as its composition. Alterations in growth rate due to differences in the overall plane of nutrition can alter body fat, protein content and the eating quality of the meat produced. For example, animals with inadequate nutrition prior to weaning have the potential to be fatter post-weaning.

Similarly, lambs that grow at more than 250g/head/day post weaning move into their fattening phase at an earlier stage of maturity. Once lambs enter the fattening phase of growth, there is little change to the muscle:bone ratio, and therefore most of the impacts of feeding on LMY% are an increase in lamb fatness and a reduction in lean meat which can decrease the value received.

Meat Standards Australia (MSA) recommends producers aim for post-weaning growth rates greater than 100-150g/head/ day in order to optimise meat eating quality.

Genetics

LMY% is also influenced by the animal's genetics. Growth rates, leanness, muscling and LMY are all heritable traits. Genetically faster growing and leaner rams, ewes and lambs will reach heavier weights earlier.

However, when there is no selection emphasis on fat, muscle or LMY%, higher LMY% will not necessarily result. A combined approach of selecting for higher growth, decreasing carcase fatness and increased muscling is required to produce higher LMY%.

Risks to pursuing higher LMY

Impact on eating quality

There is a negative correlation between LMY% and the eating quality of lamb. There are ASBVs available for LMY%, intra-muscular fat (IMF) and shear force (SF5), allowing for selection of sires that are able to achieve higher LMY% and maintain eating quality. Sheep Genetics now has two eating quality indexes available to assist in balanced selection for LMY% and eating quality. These are 'EQ – Eating Quality' and 'LEQ – Lamb Eating Quality'.

Cold shortening

Leaner animals are more susceptible to cold shortening. Cold shortening results when, prior to *rigor mortis*, carcases are subject to rapidly lowered temperature that toughens muscle and ultimately reduces eating quality. Adequate fat coverage can help prevent this. MSA requires a minimum fat class 2, this is equivalent to a GR site measurement of 6mm or greater.

Key definitions

Measure/trait	Definition
Lean meat yield percentage	The proportion of a carcase that is meat.
Dressing percentage	The proportion of the live weight of a sheep that is carcase.
Saleable meat yield	The proportion of a carcase (including some bone and fat) sold as cuts to the consumer.
GR tissue depth	The site located 110mm from the midline of the carcase along the lateral surface of the 12th rib, where fat is measured.
DEXA	An objective measurement tool which measures bone, muscle and fat in a carcase.
CT scanning	X-Ray measurements that produce cross sectional images enabling three-dimensional calculation of bone, muscle, and fat.

More information

DEXA technology fact sheet mla.com.au/dexa

Sheep Genetics sheepgenetics.org.au

Livestock Data Link visit ldl.mla.com.au **or email** ldl@integritysytems.com.au

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LDL account details:

Your NLIS username:

Your NLIS password:

myMLA account details:

Email:

Password:

Lean meat yield percentage (LMY%) tracker

Kill date	Number processed	LMY% range	Average LMY%	Notes
23 Nov 2018	*193*	*60.06 – 52.50*	*56.15*	*MSA lambs processed at ABC abattoir*