

meatup FORUM

For the latest in red meat R&D

What the commercialisation of the MSA Sheepmeat model means for producers

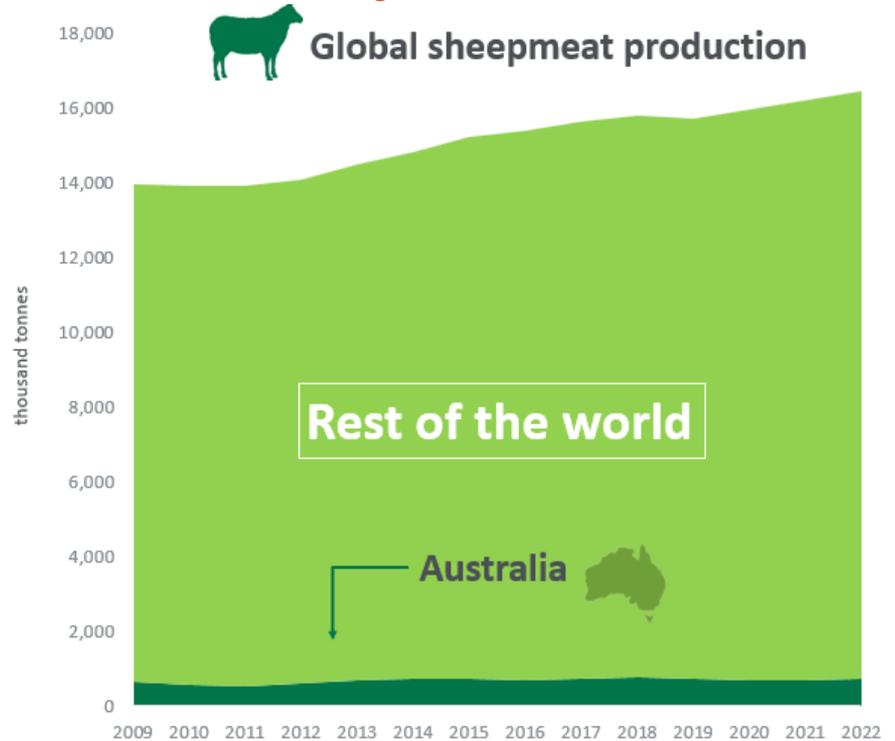
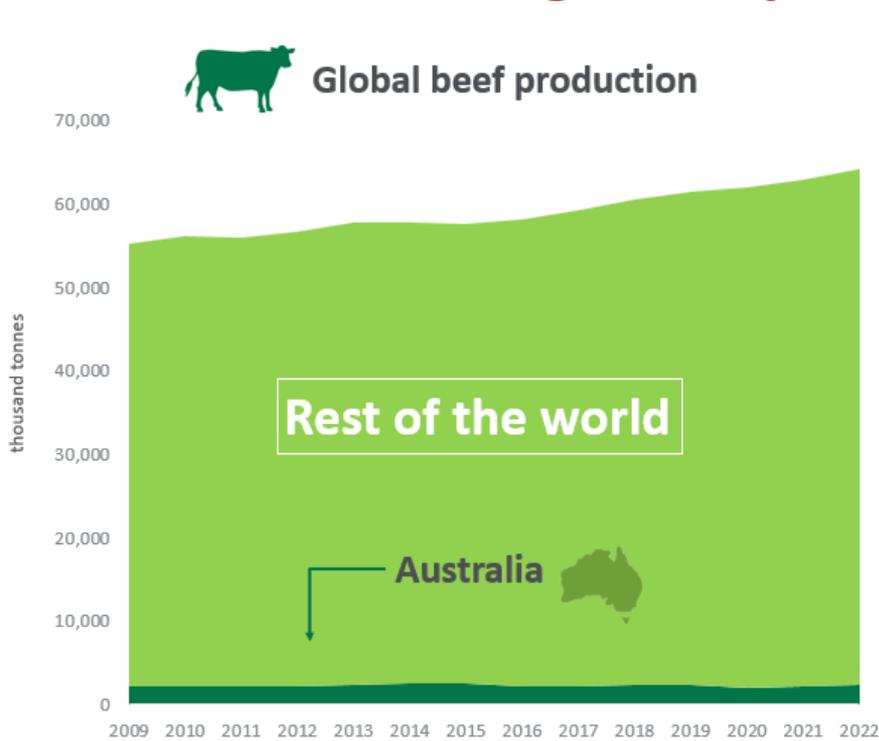
Laura Garland

Meat & Livestock Australia

Sheepmeat Opportunities and Focus Areas for Commercialisation

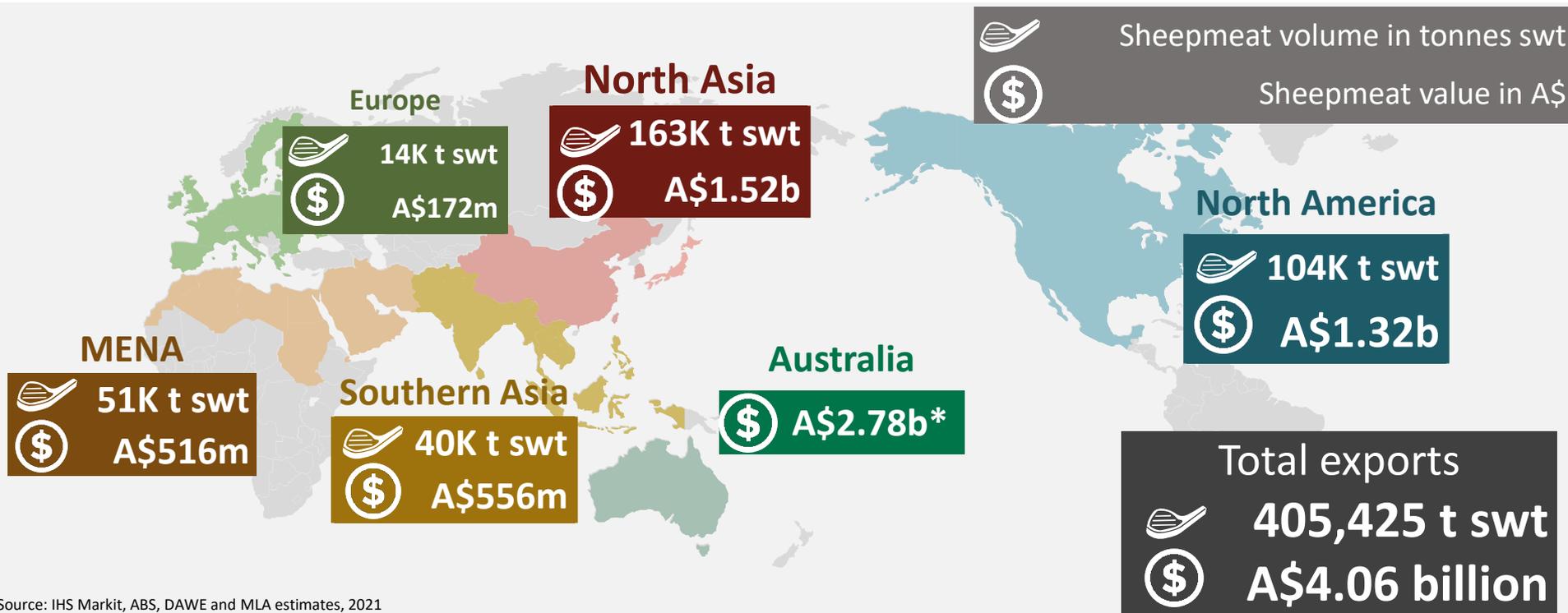
1. Current market positioning
2. MSA Sheepmeat and Technologies
3. Linking genetics to the consumer
4. Where to next – take home messages, tools and resources

1.1 Australia represents a small proportion of the global protein landscape

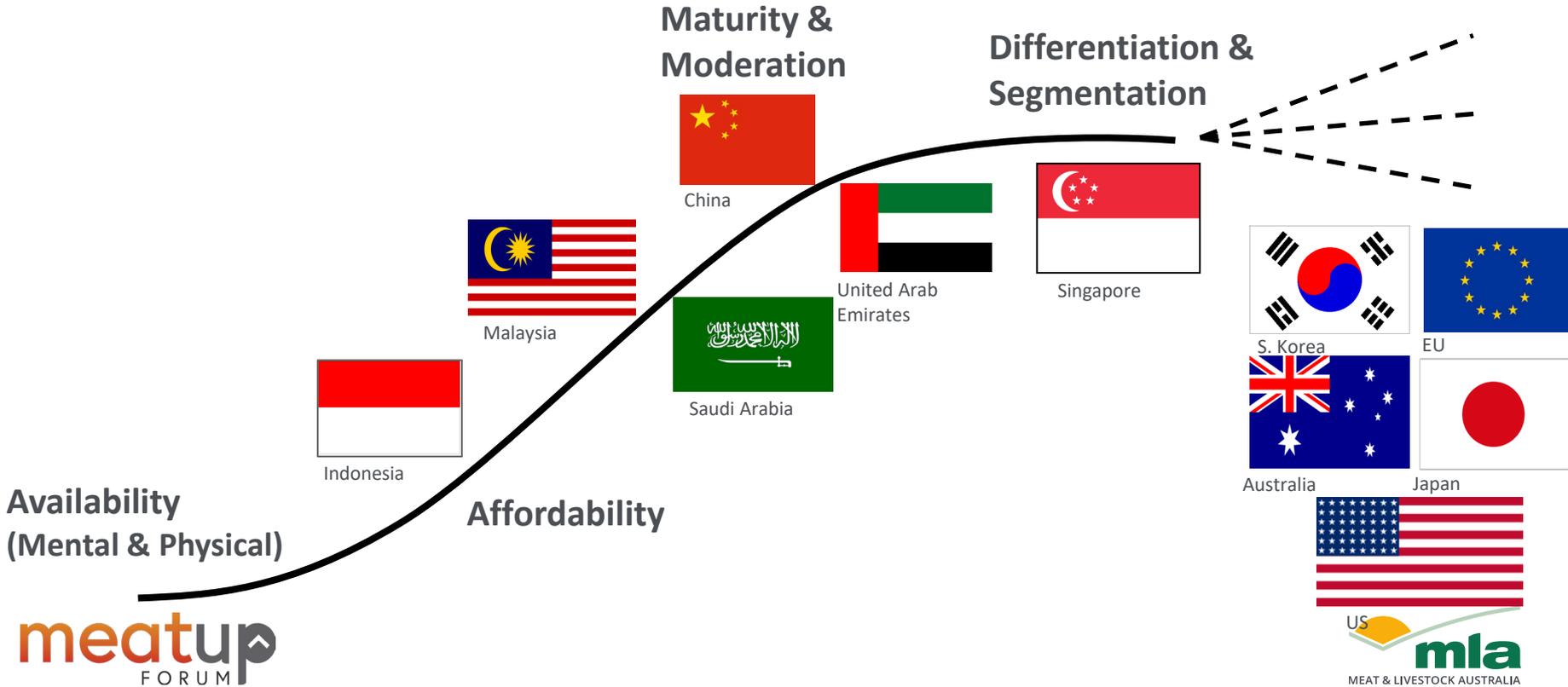


Source: Fitch Solutions, in '000 tonnes cwt, includes forecast

1.2 Global environment: demand is growing in a range of markets



1.3 Markets sit at different points on the growth curve & require distinct strategies



Intended for illustrative purposes only – position of countries is not supported by data.

MSA is representing the majority of beef



3.3 MILLION

CATTLE WERE MSA GRADED, REPRESENTING **53%** OF THE NATIONAL ADULT CATTLE SLAUGHTER – THE HIGHEST PROPORTION OF MSA CATTLE GRADED ON RECORD

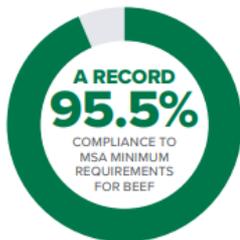
57.62

NATIONAL AVERAGE MSA INDEX



19,000 CONSUMERS

PARTICIPATED IN TASTE TESTING **OVER 130,000 MEAT SAMPLES** AS PART OF EATING QUALITY RESEARCH

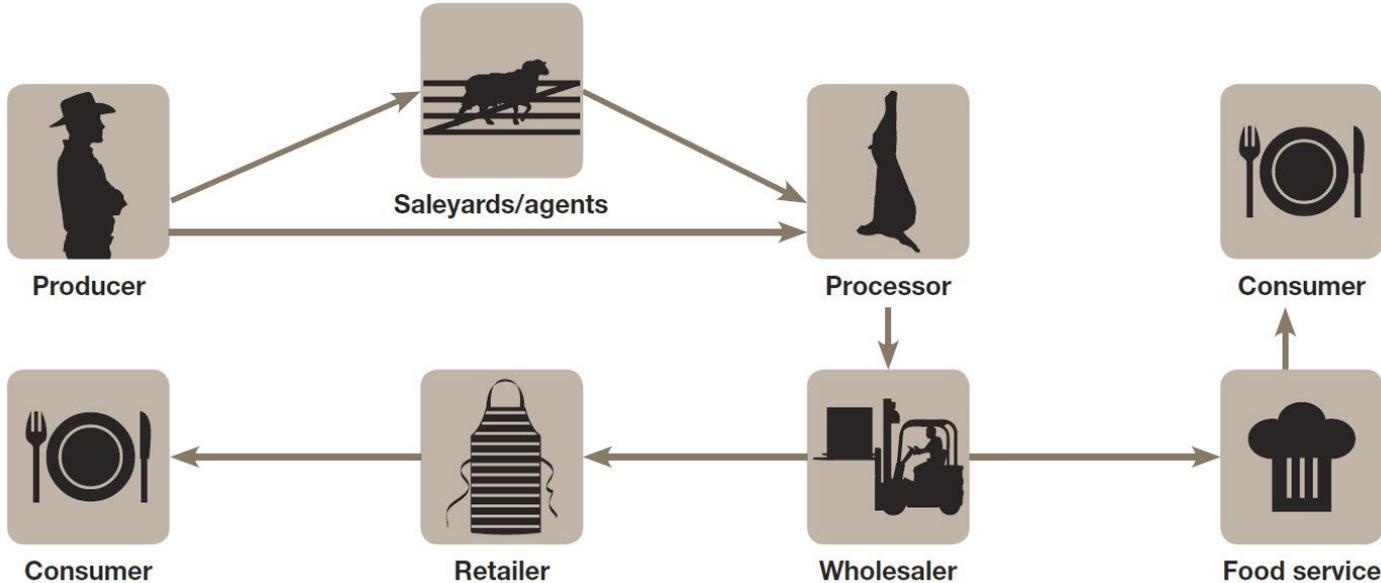


BUTCHERS		WHOLESALE	
MSA	NON MSA	MSA	NON MSA
\$36.05	\$33.28	\$25.09	\$23.12
DIFF: 7.7%		DIFF: 7.9%	

MSA DELIVERED AN ESTIMATED \$157 MILLION

IN ADDITIONAL FARM GATE RETURNS TO BEEF PRODUCERS

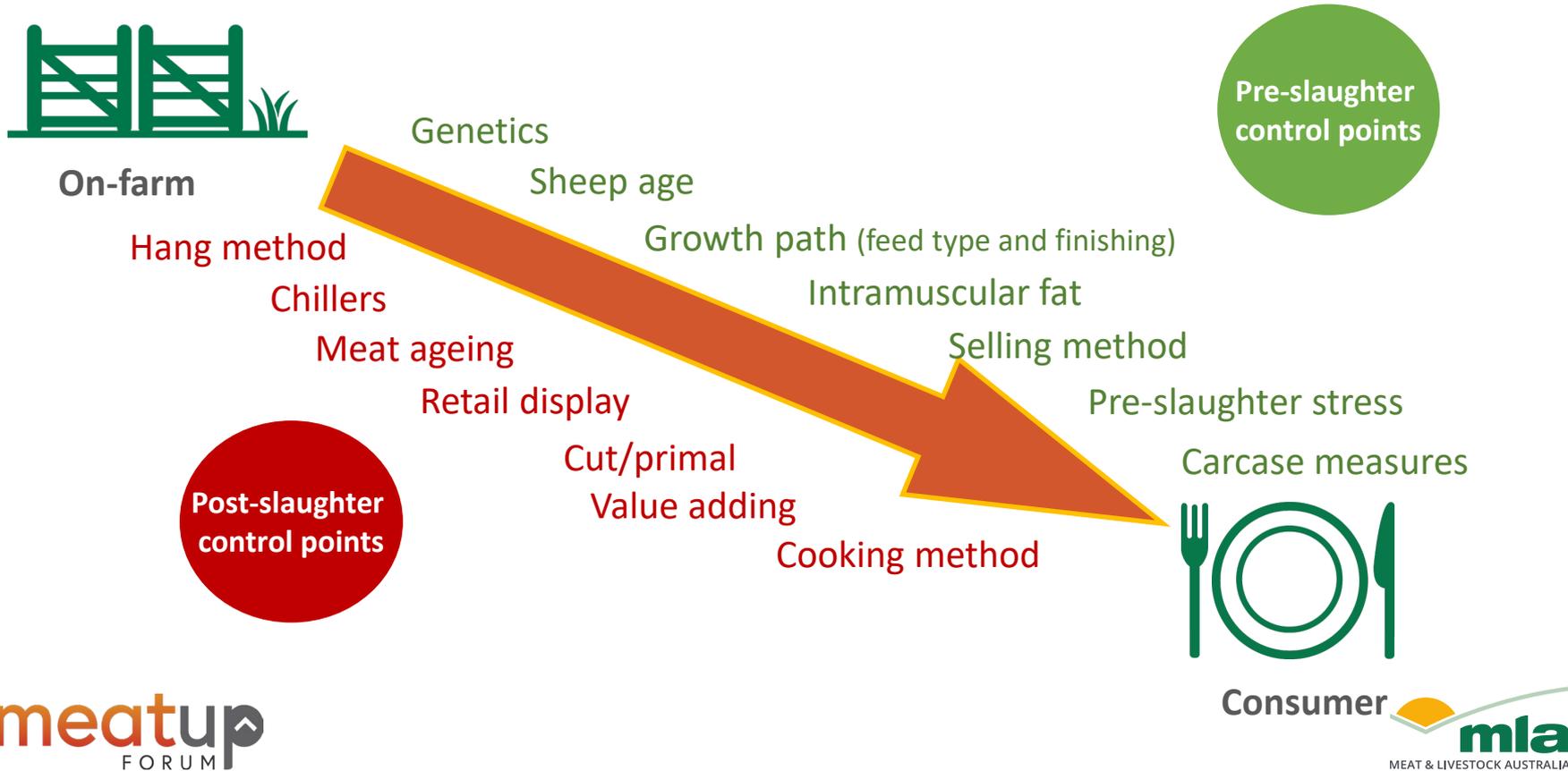
2.1 Meat Standards Australia



Consumer-focused model to improve eating quality through the whole value-chain



2.2 Managing critical control points



2.3 MSA sheepmeat cut x cook



Research has identified eating quality outcomes of different cuts from lamb, hogget and mutton:



Sheepmeat category



Cut



Cooking method



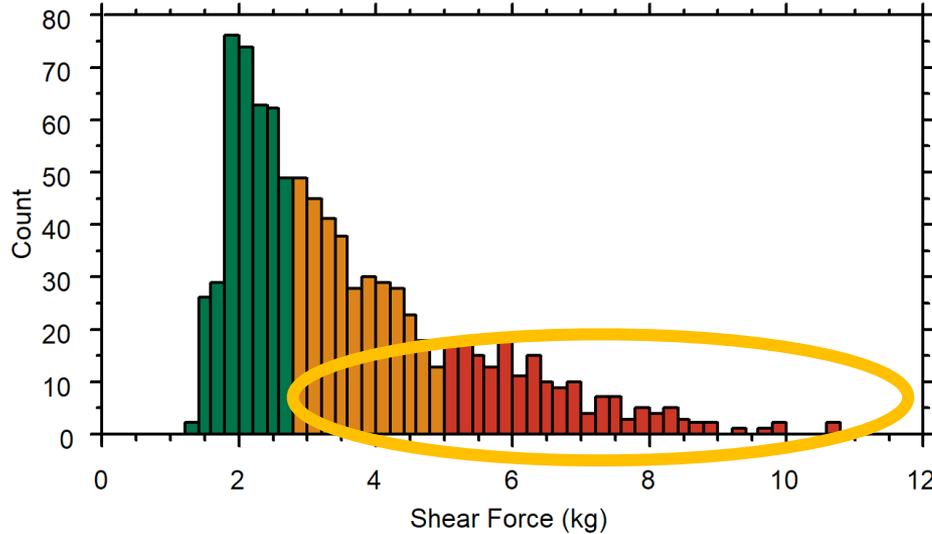
Eligibility to the MSA program

SHEEPMEAT CUTS AND COOKING METHODS					
LAMB (L) ● HOGGET (H) ● MUTTON (M) ●					
CUT	HAM *	GRILL	ROAST	STIR FRY	CASSEROLE
Leg Chump / On	4800		●●		
Leg 'Easy Carve'	4821		●●		
Leg Chump / Off	4820		●●		
Chump	4790		●●		
Chop		●●●			
Hind Shank	5031				●●
Leg Chump/On (Boneless)	5060		●●		
Rolled / Tied			●●		
Topside	5073			●●	
Silverside	5071			●	
Thick Flank (Round)	5076	●●	●●	●●	
Chump (Rump)	5130	●●	●●	●●	●●
Topside (Den)	5077			●●	
Outside (Den)	5075			●●●	
Knuckle (Round)	5072	●●	●●	●●●	
Rump (Den)	5074	●●●	●●●	●●	●●
Loin	4860		●●●		
Shortloin	4880		●●●		
Rolled			●●●		
Noisettes		●●●	●●●		
Chop		●●●			
Eye of Shortloin	5150	●●●		●●●	
Rack	4932		●●●		

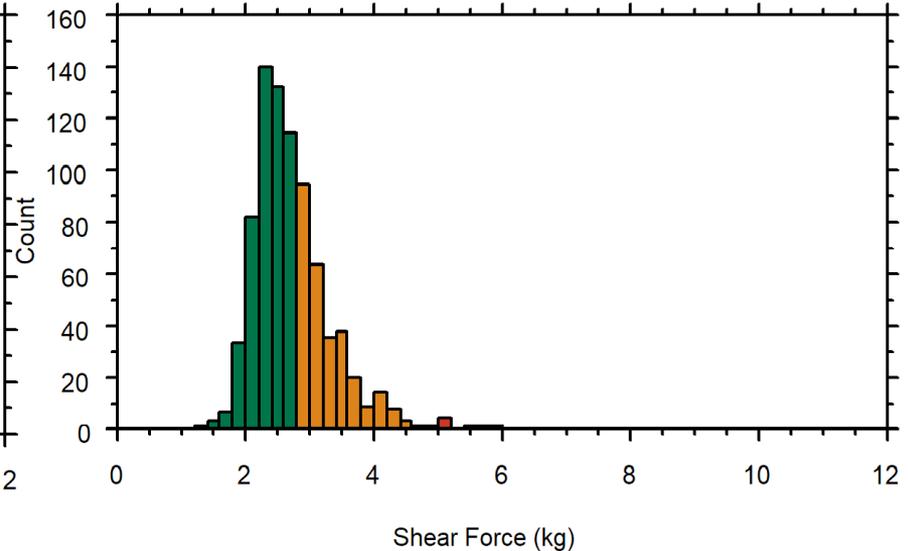
2.4 Impact of MSA

MSA pathways reduce variation in tenderness

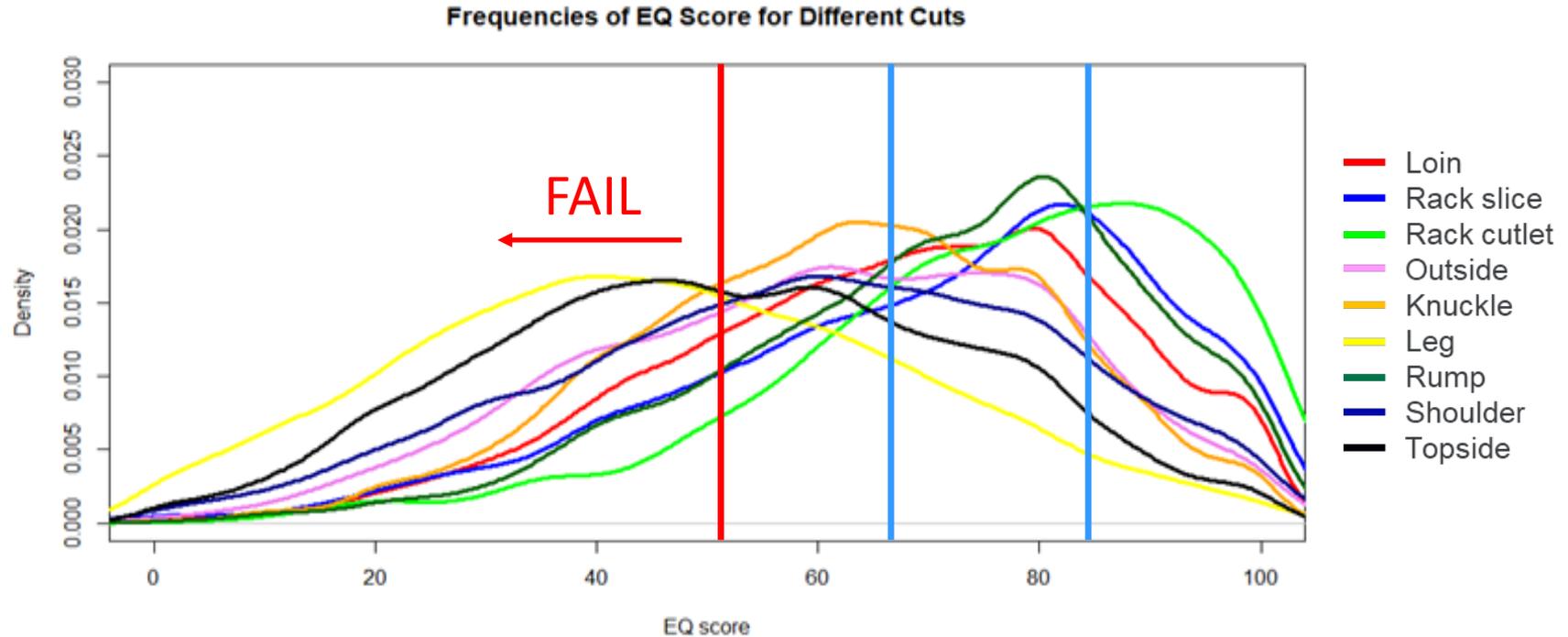
Pre-MSA



Post-MSA



2.5 Eating quality variation is evident across all cuts



2.6 Revolution for sheepmeat is coming



INPUTS

Hot standard carcase weight (HSCW)

Lean meat yield (LMY)

Intramuscular fat (IMF)

Electrical Stimulation

Ageing from 5 – 21 days

OUTPUTS

Grill



knuckle

loin

outside

rump

topside

Roast



knuckle

leg

rack

shoulder



FAIL



Testing, testing: measuring intramuscular fat (IMF)



MEQ Probe
(invasive device)



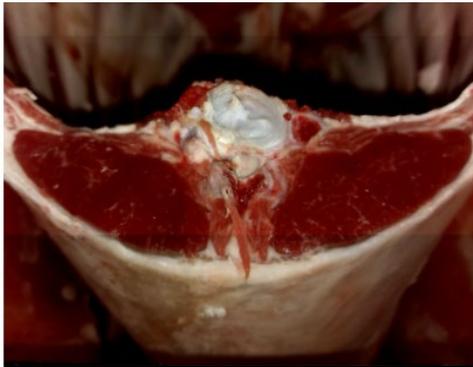
ASD NIR
(denuded muscle device)



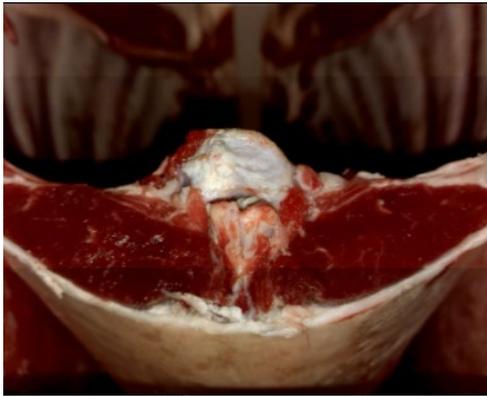
Soma Optics NIR
(cut surface device)



MasterLamb
(cut surface device)



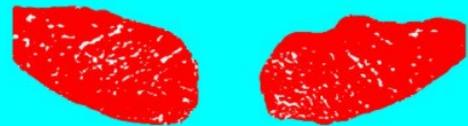
2%



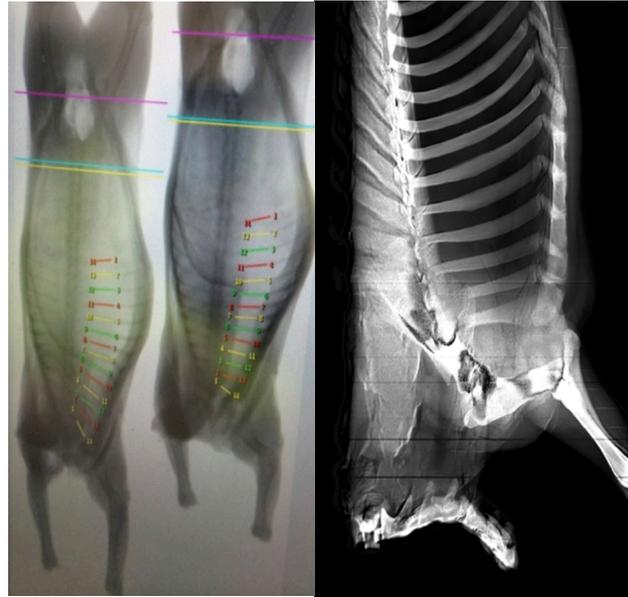
4%



6%



Objective carcass measurement



How does it fit?

Where does it fit?

Logistics?

Feasibility?



How do we get all the software and data points to talk to each other?

An evolving red meat industry

Gundagai launches world-first meat yield and IMF lamb grid

Terry Sim, May 19, 2021



Gundagai Meat Processors CEO Will Barton.

meatup
FORUM

farmonline
NATIONAL

NEWS BEEF DAIRY SHEEP CROPPING MACHINERY PROPERTY WEATHER CLASSIFY
SHEEPMEAT WOOL SALES STUDSTOCK AUCTIONS CALENDAR

Ad removed. [Details](#)

Value-based pricing will transform lamb industry says processor

Vernon Graham

12 Dec 2019, 11 a.m.

Sheep



REARING TO GO: Will Barton, CEO of Gundagai Meat Processors, and lamb floor manager, Jason Crane, with the plant's DEXA unit which measures lean carcase yield.



One of Australia's most innovative sheep processors says the lamb industry will be "unrecognisable" within five years.

Will Barton, chief executive officer of family-owned, NSW-based Gundagai Meat Processors (GMP), says the arrival of eating quality measurement technology will revolutionise the industry and open new opportunities for

Producer Feedback?

MSA Index

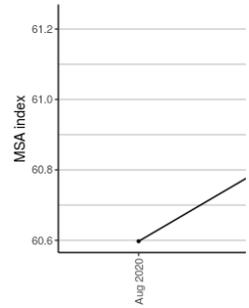
MSA g

MSA index by health status

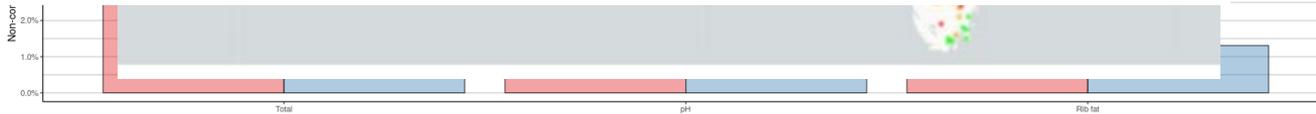
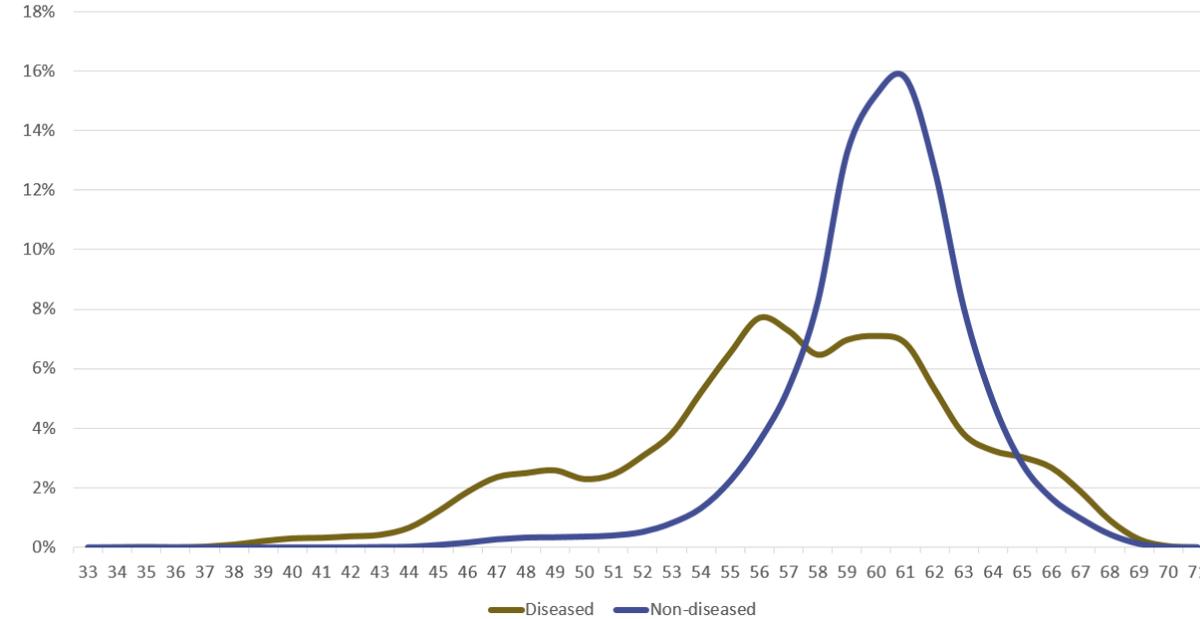
Carcase attributes over time

Select trait

MSA index



- Show overall average line
- Show table



OK.

But what can I do now?

3.1 Understanding the traits that influence eating quality

3.2 Linking genetics to the consumer

3.3 Make it work for you

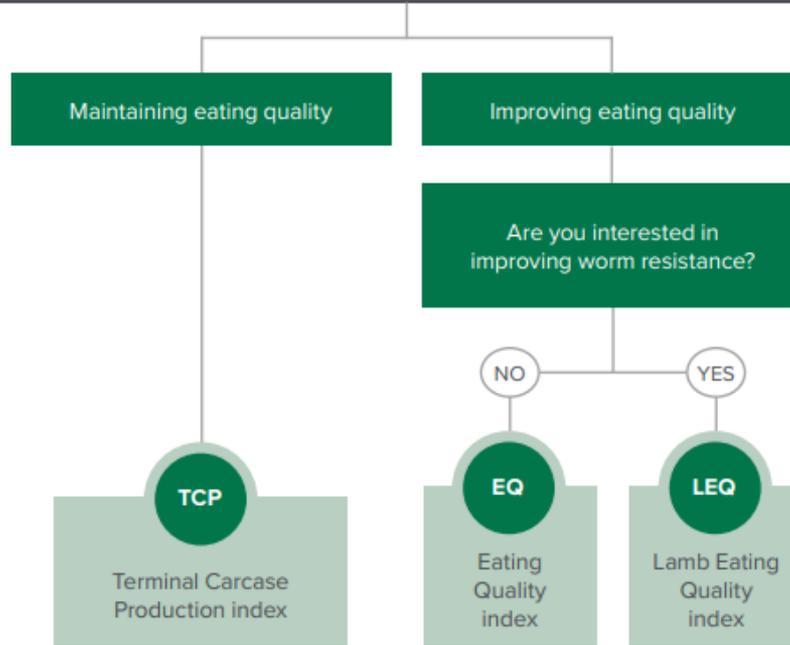
3.1 What is the role of genetics in eating quality?



IMF and SF5 are key drivers of eating quality and thus influence consumer satisfaction

3.2 Including EQ in Selection Indexes

Do you see more value in improving or maintaining eating quality in your prime lambs?

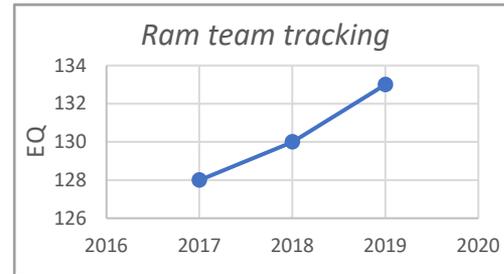


3.3 Breeding for eating quality

• *Defining your breeding objective*

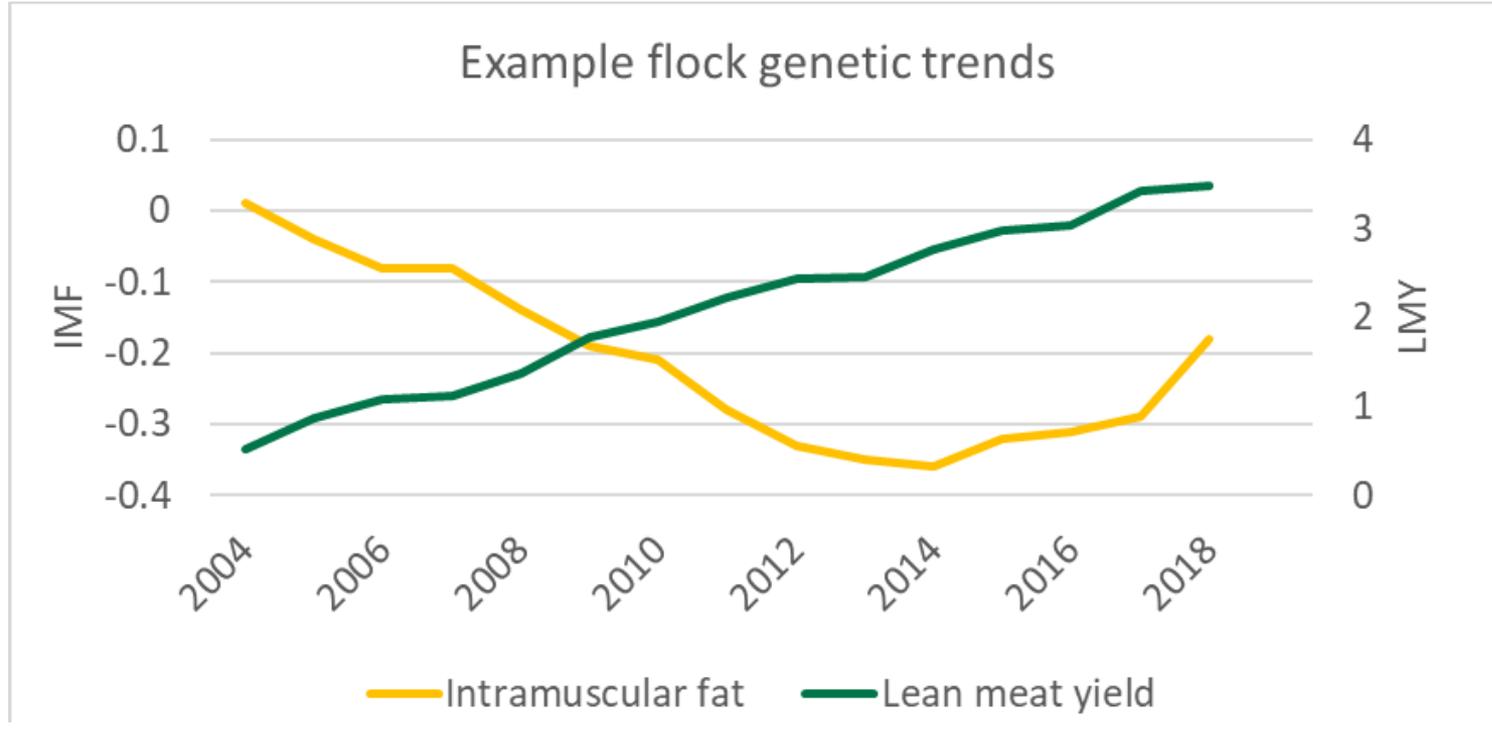
1. Which traits (and index)?
2. Where do you sit currently?
3. Where do you want to go?

LMY	IMF	SHEARF5	EQ
-0.09	0.65	-3.24	136.79
ACC. 51	ACC. 31	ACC. -29	ACC. 28



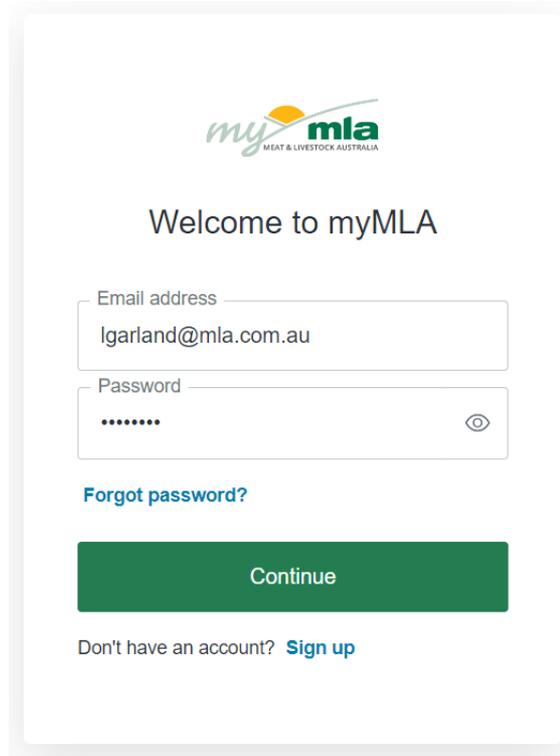
TOP 30%	TOP 20%	TOP 10%	TOP 5%	TOP 1%	TOP
133.14	136.27	141.11	144.95	151.65	168.37

3.3 Make it work for you



3.4 Becoming MSA Accredited - Registration Process

- Online and Manual Registration
 - 30 days prior to consignment for Beef
 - 2-weeks for Sheep
- Reaccreditation of LPA and MSA – every 3-years
 - Risk of letting LPA accreditation lapse – loss of MSA
 - Ensure these are done together
- MSA number is unique to PIC, LPA UserID and Owner
 - Can not transfer to a new property
 - Can not transfer to new owner of property* or company**
 - Third Party authorisation and LPA Lease agreements



The screenshot shows the myMLA login interface. At the top is the myMLA logo with the text 'MEAT & LIVESTOCK AUSTRALIA'. Below the logo is the text 'Welcome to myMLA'. There are two input fields: 'Email address' with the value 'lgarland@mla.com.au' and 'Password' with masked characters '.....'. To the right of the password field is an eye icon. Below the password field is a blue link 'Forgot password?'. At the bottom is a green 'Continue' button. Below the button is the text 'Don't have an account? Sign up'.

MSA: Producing Excellence in Eating Quality - Learning

93% COMPLETE

▼ MODULE 1 - WHY MSA?

Why MSA? What is MSA? How did MSA start? 

▼ MODULE 2 - BEEF - MAKING THE CUT

MSA Beef Grading 

Module 22 of 29

Factors affecting sheepmeat eating quality



Factors affecting sheepmeat eating quality

Marcus, a sheep producer, is considering becoming MSA registered. He is an experienced producer, and not quite sure how the MSA program works or how he will benefit.

He makes a call to MSA to find out more about the program.

Tools and resources

Tips and Tools



Intramuscular fat and eating quality

What is IMF?

Intramuscular fat (IMF), often known as marbling, is the distribution of fat within muscle. In lamb carcasses IMF measurements are currently taken from the loin and expressed as a percentage.

Intramuscular fat is a key driver of eating quality in sheepmeat. Despite being measured in the loin, IMF has a positive impact on eating across all cuts in the carcass and contributes to all factors of eating quality, including flavour and overall liking. IMF can be influenced by genetics and management, such as nutrition leading up to slaughter. It is the last fat to be deposited in the animal, with its greatest deposition evident in later stages of the growth process when nutrition supplied to the animal is above maintenance levels. It is also the first energy source to be utilised, making nutrition leading up to slaughter very important.

How does IMF affect eating quality?

Intramuscular fat has a strong influence on eating quality as indicated by consumer sensory scores of sheepmeat, when using the Meat Standards Australia (MSA) consumer sensory score protocols. It has a significant impact on the tenderness, juiciness, flavour and overall liking of the product, which ultimately determines if the product meets or fails consumer expectations. The results of untrained consumer sensory tests show that as IMF increases, so too do the predicted consumer meat quality (MQ4) scores.

Research data also shows that the average IMF of the Australian flock is approximately 4%. This average IMF percentage, when paired with a 26kg hot carcass weight and LMY above 60 results in a good everyday eating quality outcome. However, if IMF% is increased then this results in a better than everyday or premium product, as can be seen in Table 1 and Table 2 below.

What influences IMF?

IMF is predominantly influenced by management and genetics. Good management, such as ensuring a rising plane of nutrition and minimal stress leading up to slaughter, has a positive influence on IMF. In regard to genetics, Australian Sheep Breeding Values (ASBVs) are available for a range of eating quality traits and indexes. These ASBVs are available to assist in making decisions when buying ewes or rams to improve IMF and overall eating quality of the end product.

There is an IMF ASBV that can be selected, however it is important that other traits and indexes are considered in any breeding objective when making purchasing and breeding decisions.

Figure 1: Higher (top) versus lower (bottom) marbling loin



Utilising ASBVs and eating quality indexes to select rams will assist in improving the eating quality of the progeny.

Click the below links for further genetics resources or visit genetics.mla.com.au or sheepgenetics.org.au:

[Eating Quality ASBVs](#)

[Terminal Indexes for buying rams](#)

[Terminal Indexes for breeding rams](#)



Figure 1 and 2



Figure 1: A bar chart showing Consumer Sensory Scores for eating quality. The y-axis ranges from 0 to 100. The x-axis shows scores for 5, 6, and 7 star products. Scores are approximately 65.6 for 5 star, 66.2 for 6 star, and 67.2 for 7 star.

Figure 2: A bar chart showing Consumer Sensory Scores for eating quality. The y-axis ranges from 0 to 100. The x-axis shows scores for 5, 6, and 7 star products. Scores are approximately 65.6 for 5 star, 66.2 for 6 star, and 67.2 for 7 star.

Figure 3: A bar chart showing Consumer Sensory Scores for eating quality. The y-axis ranges from 0 to 100. The x-axis shows scores for 5, 6, and 7 star products. Scores are approximately 65.6 for 5 star, 66.2 for 6 star, and 67.2 for 7 star.

Figure 4: A bar chart showing Consumer Sensory Scores for eating quality. The y-axis ranges from 0 to 100. The x-axis shows scores for 5, 6, and 7 star products. Scores are approximately 65.6 for 5 star, 66.2 for 6 star, and 67.2 for 7 star.

Figure 5: A bar chart showing Consumer Sensory Scores for eating quality. The y-axis ranges from 0 to 100. The x-axis shows scores for 5, 6, and 7 star products. Scores are approximately 65.6 for 5 star, 66.2 for 6 star, and 67.2 for 7 star.

Figure 6: A bar chart showing Consumer Sensory Scores for eating quality. The y-axis ranges from 0 to 100. The x-axis shows scores for 5, 6, and 7 star products. Scores are approximately 65.6 for 5 star, 66.2 for 6 star, and 67.2 for 7 star.

Figure 7: A bar chart showing Consumer Sensory Scores for eating quality. The y-axis ranges from 0 to 100. The x-axis shows scores for 5, 6, and 7 star products. Scores are approximately 65.6 for 5 star, 66.2 for 6 star, and 67.2 for 7 star.

Figure 8: A bar chart showing Consumer Sensory Scores for eating quality. The y-axis ranges from 0 to 100. The x-axis shows scores for 5, 6, and 7 star products. Scores are approximately 65.6 for 5 star, 66.2 for 6 star, and 67.2 for 7 star.

Figure 9: A bar chart showing Consumer Sensory Scores for eating quality. The y-axis ranges from 0 to 100. The x-axis shows scores for 5, 6, and 7 star products. Scores are approximately 65.6 for 5 star, 66.2 for 6 star, and 67.2 for 7 star.

Figure 10: A bar chart showing Consumer Sensory Scores for eating quality. The y-axis ranges from 0 to 100. The x-axis shows scores for 5, 6, and 7 star products. Scores are approximately 65.6 for 5 star, 66.2 for 6 star, and 67.2 for 7 star.

Figure 11: A bar chart showing Consumer Sensory Scores for eating quality. The y-axis ranges from 0 to 100. The x-axis shows scores for 5, 6, and 7 star products. Scores are approximately 65.6 for 5 star, 66.2 for 6 star, and 67.2 for 7 star.

Figure 12: A bar chart showing Consumer Sensory Scores for eating quality. The y-axis ranges from 0 to 100. The x-axis shows scores for 5, 6, and 7 star products. Scores are approximately 65.6 for 5 star, 66.2 for 6 star, and 67.2 for 7 star.

Figure 13: A bar chart showing Consumer Sensory Scores for eating quality. The y-axis ranges from 0 to 100. The x-axis shows scores for 5, 6, and 7 star products. Scores are approximately 65.6 for 5 star, 66.2 for 6 star, and 67.2 for 7 star.

Figure 14: A bar chart showing Consumer Sensory Scores for eating quality. The y-axis ranges from 0 to 100. The x-axis shows scores for 5, 6, and 7 star products. Scores are approximately 65.6 for 5 star, 66.2 for 6 star, and 67.2 for 7 star.



Lean meat yield and eating quality

What is LMY?

Lean meat yield (LMY) is the proportion of lean meat tissue to bone and fat in a carcass and is expressed as a percentage LMY%. Lean meat yield is estimated from a combination of weight, muscle and fat dimensions and has been measured through devices such as dual energy x-ray or commercial bone out and validated through computer tomography (CT) scanning. LMY has a relatively high genetic heritability.

How does LMY affect eating quality?

Lean meat yield and eating quality have a negative relationship, whereby as LMY increases, eating quality decreases, if it is not considered in the genetic selection decision. Eating quality is influenced by intramuscular fat (IMF), hot carcass weight (HCW) and LMY.

Lean meat yield and IMF are opposed traits and need to be balanced in genetic selection decisions. Use of the Sheep Genetics eating quality indexes, and accounting for other production traits of importance assist in decreasing adverse breeding outcomes. Generally, a high yielding carcass with lower IMF values have an increased shear force, resulting in tougher and less tender meat.

Eating quality research utilising untrained consumers scored sheepmeat samples for tenderness, juiciness, flavour and overall liking. This research confirmed that as LMY increases, eating quality decreased, though this trend was less in higher percentage IMF samples. Low IMF percentages and high yielding carcasses were found to score negatively across various cuts in the carcass for all four sensory scores.

Figure 1: The relationship between lean meat yield (LMY%) and consumer meat quality (MQ4) score for high (7%).

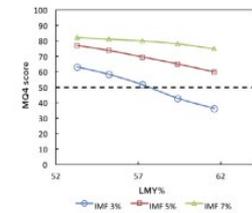
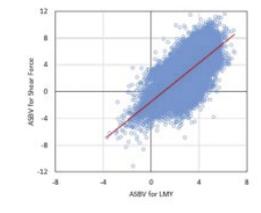


Figure 2: Relationship between the shear force and lean meat yield (LMY) Australian Sheep Breeding Values (ASBVs) in the Australian flock.



Utilising ASBVs and eating quality indexes to select rams will assist in improving the eating quality of the progeny.

Click the below links for further genetics resources or visit genetics.mla.com.au or sheepgenetics.org.au:

[Eating Quality ASBVs](#)

[Terminal Indexes for buying rams](#)

[Terminal Indexes for breeding rams](#)



Figure 1: The relationship between lean meat yield (LMY%) and consumer meat quality (MQ4) score for high (7%).



Figure 3: A diagram showing the composition of a carcass. It is divided into Fat, Muscle, and Bone. The diagram indicates that high yielding carcasses have 9% Bone, 28% Fat, and 63% Meat.

Figure 4: A diagram showing the composition of a carcass. It is divided into Fat, Muscle, and Bone. The diagram indicates that high yielding carcasses have 9% Bone, 28% Fat, and 63% Meat.

Figure 5: A diagram showing the composition of a carcass. It is divided into Fat, Muscle, and Bone. The diagram indicates that high yielding carcasses have 9% Bone, 28% Fat, and 63% Meat.

LMY%	58	60	62
61.3	61.1	60.9	60.7
63.9	63.7	63.5	63.3
66.6	66.4	66.2	66.0
69.2	69.0	68.8	68.6
71.9	71.7	71.5	71.3

Figure 6: A diagram showing the composition of a carcass. It is divided into Fat, Muscle, and Bone. The diagram indicates that high yielding carcasses have 9% Bone, 28% Fat, and 63% Meat.

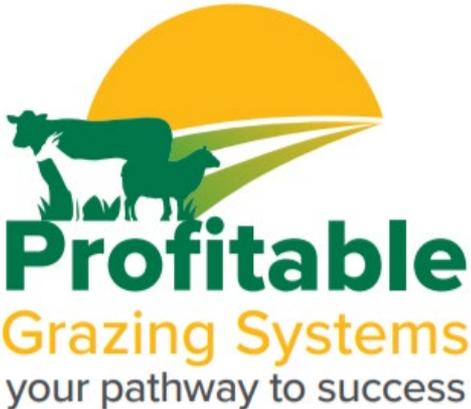
LMY%	58	60	62
49.3	49.0	48.8	48.6
50.4	50.2	50.0	49.8
51.6	51.4	51.2	51.0
52.8	52.6	52.4	52.2
54.0	53.8	53.6	53.3

Figure 7: A diagram showing the composition of a carcass. It is divided into Fat, Muscle, and Bone. The diagram indicates that high yielding carcasses have 9% Bone, 28% Fat, and 63% Meat.

Figure 8: A diagram showing the composition of a carcass. It is divided into Fat, Muscle, and Bone. The diagram indicates that high yielding carcasses have 9% Bone, 28% Fat, and 63% Meat.

What's next?

- MLA genetics hub
- Productivity and Profitability webinars - MLA
- Bred Well Fed Well workshops
- Profitable Grazing Systems training packages
- MLA Producer Demonstration Sites



[Home](#) [Tropical cattle](#) [Temperate cattle](#) [Prime lambs](#) [Merinos](#)



Supporting practice change

Small groups of producers who want to improve their whole farm performance



and have it **demonstrated in practice**



Coaches and facilitators who share their knowledge, skills and experience



Technical experts to help demonstrate and measure

Fellow producers to share ideas



Practical and relevant training packages



Customised projects to suit the regional needs



Take home messages

1. MSA Model has been developed and currently working with industry to be implemented – eating quality feedback is on the horizon
2. Use ASBVs and indexes available to make informed breeding decisions
3. Become MSA registered now

Thank You



Questions?

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Meat Standards Australia

1800 111 672

msaenquiries@mla.com.au

meatup
FORUM

The logo for Meat & Livestock Australia (MLA) features a stylized white outline of a sheep's head above the lowercase letters "mla".
mla
MEAT & LIVESTOCK AUSTRALIA

Morning Tea Followed by Concurrent Sessions

Room 1

Room 2

11:10am	Heifer management: set 'em up right Dr. Enoch Bergman, Swans Veterinary Services	Ewe lamb mating: Do's, don't, and benefits Jason Trompf, Lambs Alive
11:50am	Calving intervention: when, and what to do Dr. Enoch Bergman, Swans Veterinary Services	Determining and managing scanning to weaning loss Caroline Jacobsen, Murdoch University