



PRODUCTIVITY & PROFITABILITY

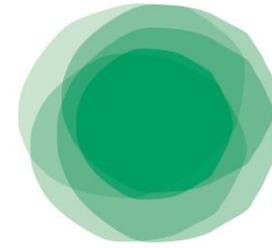


How to incorporate genetics into a value chain approach

PRESENTER: Dr Penny Schulz, Livestock Technical Specialist



Dr Penny Schulz



**SA
DROUGHT
HUB**

**Livestock Technical Specialist Adoption Officer
University of Adelaide**

- Extension and adoption specialist
- Commercial sheep and beef producer
- Board director and industry advisor
- Livestock genetics, agtech, farm business management, sustainable farming systems



Australian Government
Department of Agriculture,
Fisheries and Forestry



Future
Drought
Fund



**SA
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Overview

- What is a value chain approach and are you in it?
- What drives profit in your business? (let's add genetics)
- Hitting your target market “sweet spot”
- Cost of non-compliance
- Your breeding objective
- Genetic traits that help drive profit
- How do you know it's working?
- Resources and tools to help



Introduction

- Producers are a key part of the red meat value chain.
- Not meeting market specifications dents your profitability.
- Most market specifications have genetic traits of influence.
- Selection and breeding objectives can help hit your target more consistently and efficiently.
- Assess your performance and make improvements to your program.



What is a value chain approach?

- **Yes – producers are a key part of the value chain!**
- Supply chain = producing a bulk commodity
- Value chain = producing a high quality, premium product
- Value is extracted along the way
- Strongest link to the value chain = hitting your target market
- Includes good relationship with your buyer/processor, consumer understanding, market trends and opportunities

What drives profit in your livestock business?

- Profit = Income - Costs
- Income = quantity of product x price received
- Costs = operating costs (variable) and fixed costs

Want more profit?

- Increase quantity of product
- Maintain or decrease cost of production
- Improve the price received



Fast Five to Focus On....

1. Optimise stocking rate 
2. Improve weaning rate
(reproductive performance) 
3. Improve growth rate 
4. Control cost of production 
5. Evaluate your market options and
consistently meet your market specifications 



Are you hitting the target?

- How often do producers meet their market specifications?
- How much does non-compliance cost?
- What if you're not hitting your target market?
 - ✓ Management
 - ✓ Genetics
- **Make sure you have the right target market!**

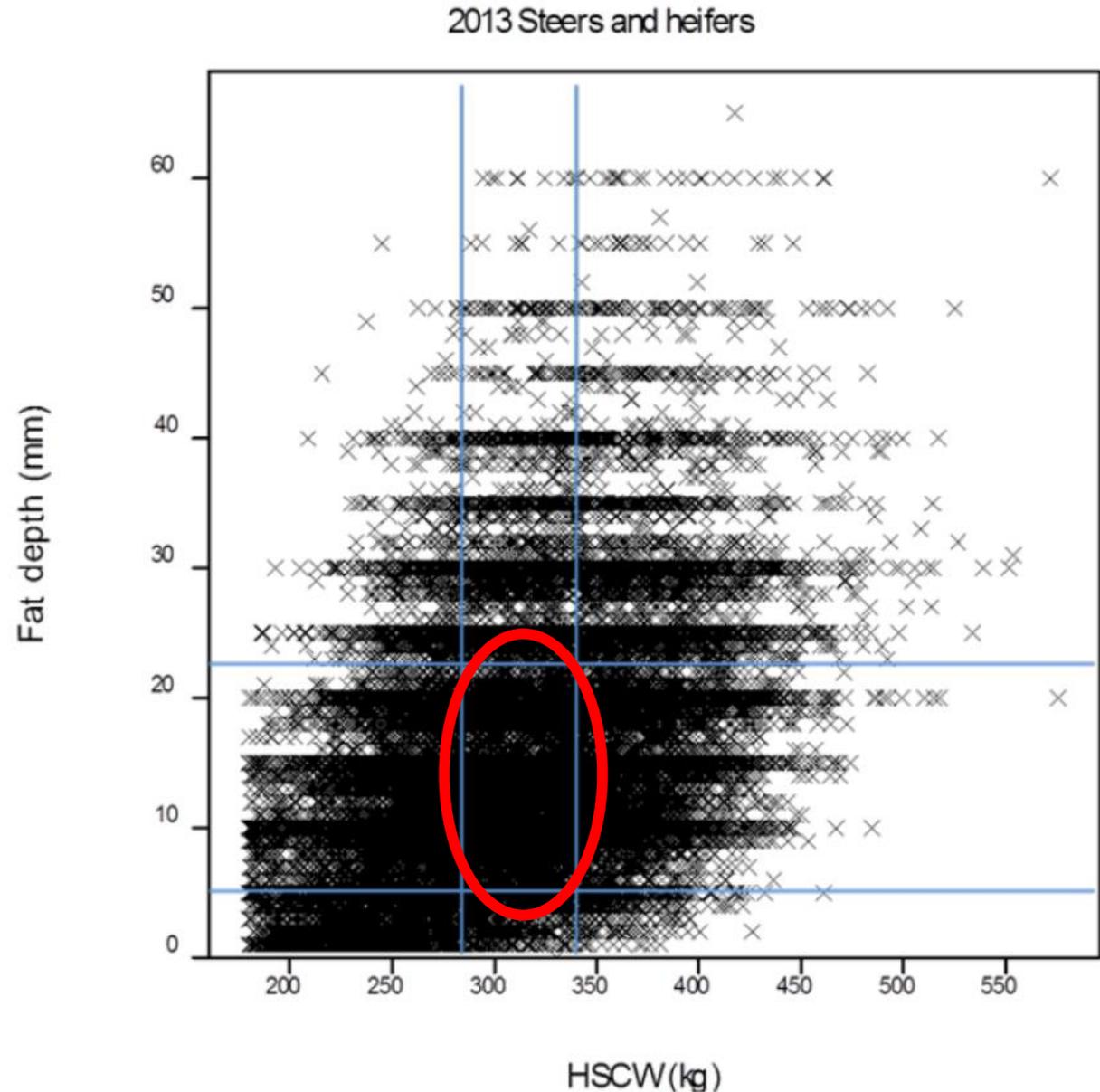


Cost of non-compliance

- 2017 study investigating compliance of Victoria pasture fed beef value chain
- 63,000 heifers and steers analysed for their compliance to specifications across two years (2012 and 2013)
- Only 33.9% met all specifications for carcass weight and fat depth
- Average cost of non-compliance \$78 per carcass
- Range of cost up to \$344 per carcass (way too heavy & fat)
- Based on \$3.30/kg carcass weight – you do the math for recent pricing!

Sweet spot

- Crawford et al 2017
- MSA only just getting popular
- Look at discounting rates
- Know the Sweet Spot
- Aim to be financially rewarded and consistent
- Be a reliable supplier of beef and lamb that consistently hits the Sweet Spot



Lamb Grid example

Market Specifications
 20.1kg – 32.0kg HSCW
 Fat Score 2 – 5
 Sweet spot = \$4.70/kg



NSL - Suckers			
HSCW	CROSS BRED LAMB	DORPER LAMB	MERINO LAMB
20.1kg – 32.0kg	\$4.70	\$4.50	\$4.40
18.1kg – 20.0kg	\$4.30	\$4.10	\$4.00

Shorn Lambs			
HSCW	CROSS BRED LAMB	DORPER LAMB	MERINO LAMB
22.1kg – 32.0kg	\$4.40	\$4.20	\$4.10
20.1kg – 22.0kg	\$4.00	\$3.80	\$3.70

HSCW	HOGGET
20.1kg – 32.0kg	\$2.00

- * Please note penalties in weight specifications. 32.1kg+ less 50c/kg, 20.0kg – 16kg priced at \$3.00/kg, -16kg \$1.00/kg
- * Above pricing is applicable for stock identified as Fat Score 2-5. If identified as Fat Score 1, penalty of \$1.00/kg
- * Ram Lambs will be priced at \$2.00/kg

Beware the discounting!
 32.1kg+ = -50c/kg
 16-20kg priced at \$3.00/kg
 <16kg = \$1.00/kg
 Fat score 1 = -\$1.00/kg

Lamb Grid example 2022

Market Specifications
 16.1kg – 32.0kg HSCW
 Fat Score 2 – 5
 Sweet spot = \$7.60/kg

	HSCW	XBL	DORPER LAMB	MERINO LAMB
16.1kg – 32.0kg	\$7.60	\$7.60	\$7.40	\$7.40

*Please note penalties in weight specifications. 32.1kg-34.0kg less .50c/kg, 34.1kg+ less additional .50c/kg, under 16.0kg priced at \$5.00/kg.

** Above pricing is applicable for stock identified as Fat Score 2-5. If identified as Fat Score 1, penalty of 0.30c/kg will be applied.

*** Ram Lambs incur a penalty of .50c/kg.

**** Hoggets to be POA

Relatively low discounting!
 32.1kg+ = -50c/kg
 16-20kg = -50c/kg
 <16kg = \$5.00/kg
 Fat score 1 = -30c/kg

Beef example – MSA Grassfed Steer

EU GRASSLANDS	GRASSLANDS				STEERS			
	1-4	5-8	1-4	5-8	S	S1	S2	S3
0-4	0-4	0-4	5-6	5-6	0-8	0-6	7-8	0-8
5-22	5-22	5-22	5-22	5-22	5-22	3-22	3-22	0-22
NIL	NIL	NIL	NIL	NIL	0-4	0-4	0-4	0-9
1A-4	1A-4	1A-4	1A-4	1A-4	1A-5	ANY	ANY	ANY
0-4	0-4	0-4	0-4	0-4	0-5	ANY	ANY	ANY
240-420	240-420	240-420	240-420	240-420	240-420	180-420	180-420	ANY
PRICE	PRICE	PRICE	PRICE	PRICE	PRICE	PRICE	PRICE	PRICE
920	910	840	830	830	745	740	730	720
920	910	840	830	830	745	740	730	720
920	910	840	830	830	745	740	730	720
920	910	840	830	830	745	740	730	720
905	895	825	815	815	740	735	725	715
900	890	820	810	810	735	730	720	710
895	885	815	805	805	730	720	710	700
-	-	-	-	-	-	715	705	695
-	-	-	-	-	-	705	695	685
-	-	-	-	-	-	695	685	655
-	-	-	-	-	-	-	-	485
-	-	-	-	-	-	-	-	385
-	-	-	-	-	-	-	-	355
-	-	-	-	-	-	-	-	335
-	-	-	-	-	-	-	-	320



SWEET SPOT:
Carcase weight 300-420kg
Fat 5-22mm
0-4 Teeth
Meat colour 1A-4
Fat colour 0-4
Boning groups 1-4

MARKET SPECIFICATIONS:
Carcase weight 240-420kg
Fat 5-22mm
0-4 Teeth
Meat colour 1A-4
Fat colour 0-4

Breeding Objective

- Fit for your farm
- Fit for your market
 - Carcase traits – Muscle (EMA or EMD), Fat, IMF, LMY/RBY
 - Growth traits – Weights at weaning, post weaning, yearling, and beyond
- Spend more time on breeding and selection decisions
- Genetics is permanent and cumulative



**BredWell
FedWell**

Breeding and feeding to maximise profit



BEEF Weight EBVs



ANGUS 400 DAY WT	
Breed Average 400 Day Weight	+90
Your Herd Average 400 Day Weight	+80
Bull Purchased	+100
Difference between your herd and new bull	+20
Your Calves	+10kg heavier
@ \$3.00/kg LWT	\$30 / hd

BEEF Carcasse EBVs

- Carcasse Weight
- Eye Muscle Area (EMA)
- Rib Fat
- Rump Fat
- Retail Beef Yield (RBY)
- Intramuscular Fat (IMF)



BEEF Carcass EBVs

Eye Muscle Area EMA (cm²)

- Genetic potential for eye muscle area 12/13th rib site
- More positive generally more favourable
- Influences carcass weight and retail beef yield

Carcass Weight (kg)

- Weight of Hot Standard Carcass Weight (HSCW)
- Defined by AUSMEAT to be 650 days (750d for Angus)
- Carcass weight – quantity profit driver



BEEF Carcass EBVs

Rib Fat and Rump Fat (mm)

- Rib Fat: Depth at the 12-13th rib site of std wt steer carcass
- Rump Fat: Depth at P8 rump site
- More +ve or more -ve may be favourable depending on your breeding objective
- Fat is positive correlated to reproductive performance and resilience in tough times
- Negatively correlated with yield but minimum fat is required for quality and processing needs



BEEF Carcass EBVs

Retail Beef Yield (RBY) %

- Difference in boned out retail beef yield in std carcass
- More positive = more favourable

Intramuscular Fat (IMF) %

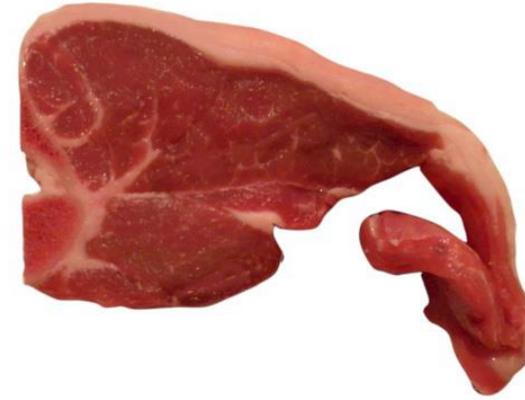
- Difference in IMF (marbling) as the 12/13th rib site in a standard carcass
- More positive = more favourable

Value Based Payment Systems

- More accurate and objective measures



LAMB Carcass Traits



Muscle – Eye Muscle Depth EMD

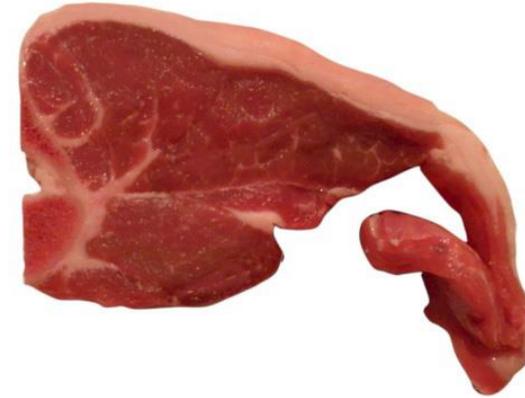
- Both management and nutrition change eye muscle
- EMD ASBVs tell you the genetic potential of an animal for muscling
- \uparrow muscling = \uparrow carcass value (\uparrow LMY)

Other benefits:

- Higher dressing percentage
- Better reproductive performance and worm resistance

Watch out – relationship with growth and leanness, plus meat quality

LAMB Carcass Traits



FAT (mm) – genetic potential for fatness

- Post weaning PFAT, Yearling YFAT, Hogget HFAT
- PRIME LAMBS – fatness has an intermediate optimum
- BREEDING EWES – fat increases ability to maintain BCS during tough times
- Other benefits – improved reproductive rate, CV of fibre diameter, intramuscular fat and eating quality
- Watch out – increased fatness decreases fleece weight, carcass yield



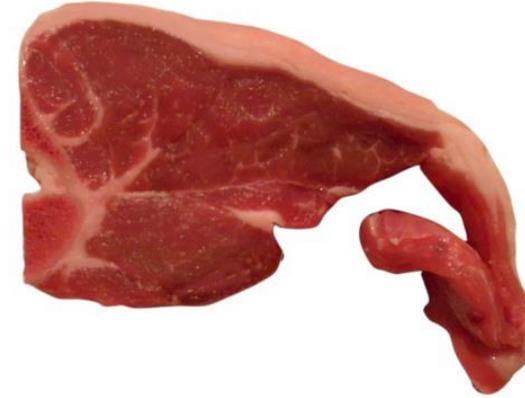
LAMB Growth Traits

Weight for Age (WT)

- Growth potential of an animal at key times of typical marketing
- WWT, PWT, YWT, HWT, AWT
- Selection for higher growth = lambs reach heavier weights at younger age
- Lambs marketed sooner or at heavier weights for age
- Other benefits – improved repro rate, higher LMY, higher fleece weight
- Watch out – increased FD, increase BWT, high mature weights



LAMB LMY and Eating Quality



LMY % – Lean Meat Yield

- Higher % means greater potential of carcass lean meat yield

Intramuscular Fat (IMF) %

- Higher % means greater potential for IMF expression (marbling)

What if I don't get paid for these traits?

- Consider it for the future



Value based payments in Lamb

Weeks 33-34		LEAN MEAT YIELD (%)				
14 August 23						
21 August 23		<50	50 – 53	53 – 57	57 – 60	> 60
HSCW (kg)	<18	\$2.45	\$2.80	\$3.15	\$2.85	\$1.65
	18 – 24	\$4.45	\$4.80	\$5.15	\$4.85	\$3.65
	24 – 32	\$4.80	\$5.05	\$5.35	\$5.05	\$3.85
	32 – 34	\$4.60	\$4.85	\$5.15	\$4.85	\$3.65
	>34	\$3.30	\$3.55	\$3.85	\$3.55	\$2.35

All lambs graded as GLQ5+ receive \$0.80 premium per kg

Sweet Spot

Marble Score

Other value chain considerations could be included in your breeding program?

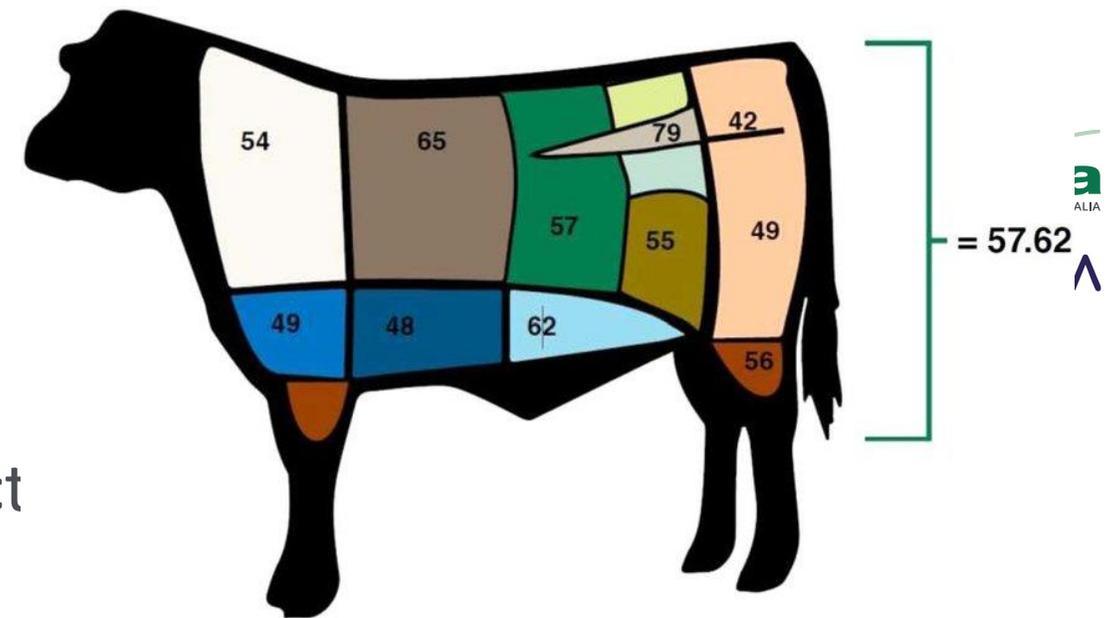
- Lean meat yield and eating quality
- Value based payment systems
- Sustainability and methane emissions
 - New Sustainability research index for Merinos
- Welfare and wellbeing traits
 - Polled/horned, worm resistance, flystrike resistance
- Net Feed Intake (NFI-F)

Target market example – Grassfed MSA Steers

Attribute	Specification	Genetic Traits of Influence
HSCW	300 – 420 kg	Growth (400 & 600 day), CWT
Fat	5 – 22 mm	Rib Fat and Rump Fat
Dentition	0 – 4 teeth	Growth (400 & 600 day)
	Ossification	Growth for Age (400 & 600 day)
Meat Colour	0 – 4	MSA Management Guidelines
Fat Colour	0 - 4	MSA Management Guidelines
Boning Groups	1A – 4	IMF, 400 & 600 Day, Rib Fat, Meat & Fat Colour
MSA Index	Not stated but likely 60+ points	IMF, 400 & 600 Day, Rib Fat, Meat & Fat Colour

What is the MSA Index?

- Standard national measure of the predict quality of a carcase
- MSA Index is a number between 30 to 80 (ave 57.37)
- Represents eating quality across the whole carcase
- Model predicts eating quality of 39 cuts in carcase
- MSA Index is a weighted average of the scores
- A tool to be used by producers and lot feeders



[Using the MSA Index to optimise beef eating quality](#)

Image source: [Bonny et al. \(2018\) Review: The variability of the eating quality of beef can be reduced by predicting consumer satisfaction.](#)

What impacts the MSA Index?

Carcase Input	Size of Effect on the MSA Index (units)	Relative importance of change in MSA Index
HGP Status	5	Very High
Milk-fed vealer	4	Very High
Saleyard	5	Very High
MSA marbling	0.15	High
Hump height	-0.7	High
Tropical Breed Content %	0 to -6.3	High
Ossification score	0.6	High
Rib fat	0.1	Medium
HSCW	0.01	Low
Sex	0.3 (females)	Low

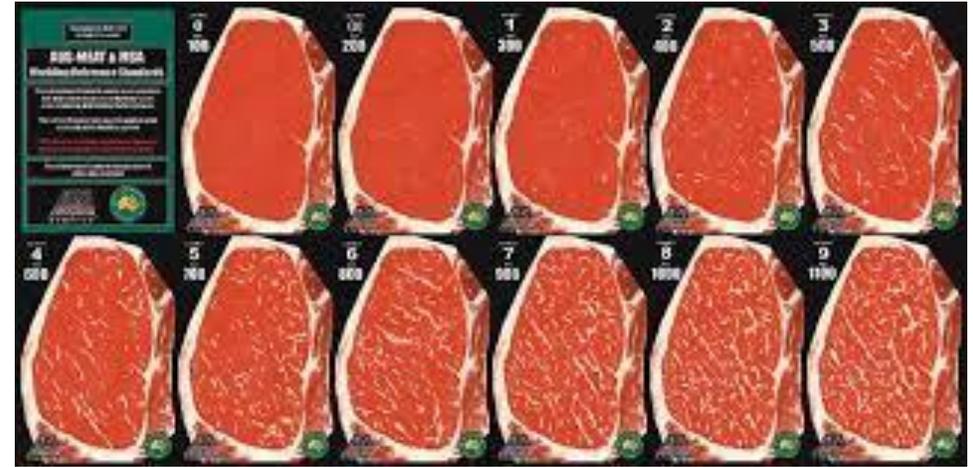
Want to improve your MSA Index?

Increase Marbling

- Increase marbling through genetic strategies
- Purchase bulls with higher EBVs for IMF%
- Finish on a good nutrition prior to slaughter

Increase Carcase Wt and Rib Fat

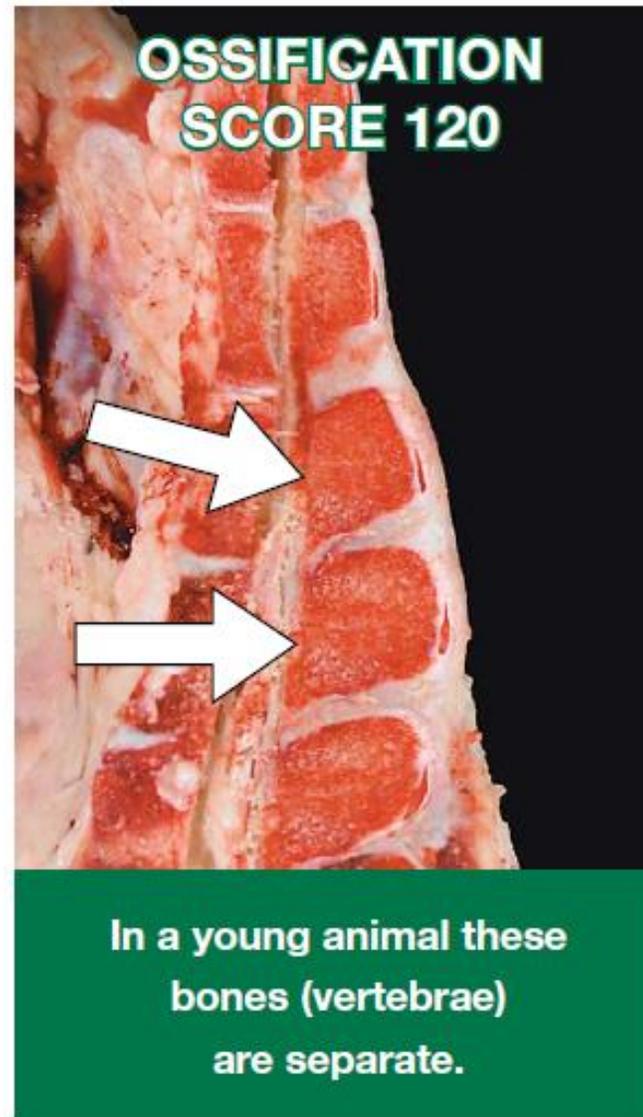
- Aim to achieve heavier carcasses at the same age/maturity (ossification)
- Use sires with higher 400 or 600 Day EBVs
- Improve nutritional value of feed



Ossification

Increase Marbling

- Measure of physical maturity of the beef carcass
- HSCW + Ossification = weight for maturity measurement
- Faster growing cattle have better eating quality
- Heifers, HGPs and stress can increase ossification score



How do you know you're hitting your target market?

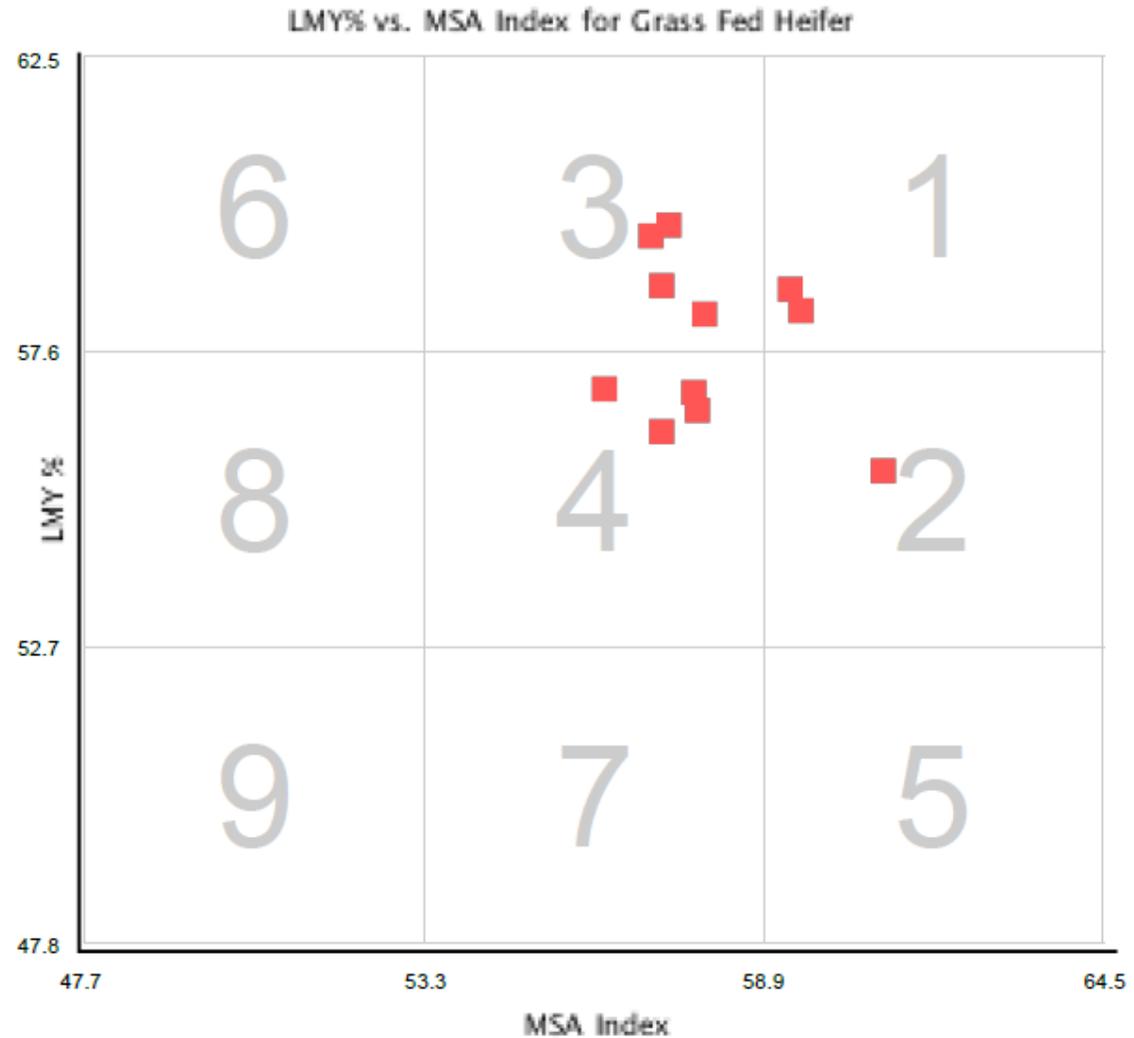
- Obtain carcass feedback from your processor / feedlot performance
- Strong relationship with processor / feedlotter (not just your agent)
- Livestock Data Link / MLA MyFeedback
- Analyse and evaluate the feedback you receive
- Calculate the cost of non-compliance
- Make changes to your management and breeding objectives if needed

Value-based marketing feedback

Body Sex	RFID	Farm Tag	Dent Shape	Fat	MC	FC	Oss	AUS Mb	MSA Mb	EMA	BG	Breed	ACFM Grader ID	Right Side			Left Side			Total HSCW (kg)	Total Value	MSA Index	LMY* %	VBM Group
														Weight	\$/Kg	Value	Weight	\$/Kg	Value					
565	F	942 000031251880	0	C	8	4	2	190	1	320	80		878275	125.6	4.95	621.72	122.2	4.95	604.89	247.8	1,226.61	59.62		
566	F	942 000031251184	0	C	8	2	2	160	1	380	81	6	878275	135.8	5.40	733.32	136.6	5.40	737.64	272.4	1,470.96	59.28	58.65	1
567	F	942 000031252102	0	C	10	2	2	140	1	320	68	5	878275	117.4	5.30	622.22	116.4	5.30	616.92	233.8	1,239.14	59.45	58.30	1
568	F	942 000031251838	0	C	8	2	3	180	1	320	88	7	878275	127.8	5.35	683.73	125.6	5.35	671.96	253.4	1,355.69	57.30	59.69	3
569	F	942 000031251771	0	C	8	2	2	190	1	320	65	8	878275	119.8	5.35	640.93	121.0	5.35	647.35	240.8	1,288.28	56.21	56.99	4
570	F	942 000031251980	0	C	10	2	2	190	1	320	79	7	878275	147.2	5.45	802.24	147.2	5.45	802.24	294.4	1,604.48	57.17	56.32	4
571	F	942 000031250940	0	C	15	2	2	180	1	320	79	7	878275	135.4	5.40	731.16	134.2	5.40	724.68	269.6	1,455.84	57.69	56.97	4
572	F	942 000031251732	0	C	10	3	3	170	1	320	84	7	878275	146.4	5.45	797.88	145.2	5.45	791.34	291.6	1,589.22	57.86	58.26	3
573	M	942 000031250976	0	C	15	2	2	140	1	360	70	3	878275	130.6	5.40	705.24	128.8	5.40	695.52	259.4	1,400.76	60.45	58.67	1
574	F	942 000031251255	0	C	12	3	3	180	1	330	82	7	878275	130.2	5.35	696.57	127.6	5.35	682.66	257.8	1,379.23	57.00	59.49	3
575	F	942 000031251711	0	C	7	2	2	170	1	360	82		878275	132.0	5.05	666.60	124.0	5.05	626.20	256.0	1,292.80		60.56	
576	F	942 000031252178	0	C	10	2	2	150	1	380	75	4	878275	143.2	5.45	780.44	140.0	5.45	763.00	283.2	1,543.44	60.74	55.68	2
577	F	942 000031252109	0	C	10	2	2	180	1	320	85	7	878275	144.0	5.45	784.80	142.0	5.45	773.90	286.0	1,558.70	57.18	58.68	3
578	F	942 000031251004	0	C	13	2	2	180	1	320	80	7	878275	147.2	5.45	802.24	144.0	5.45	784.80	291.2	1,587.04	57.77	56.63	4
579	F		0	C	8	2	3	170	0	250	78		878275	128.6	5.05	649.43	126.4	5.05	638.32	255.0	1,287.75		59.95	

Summary	Head	Weight	Avg Weight	Avg Fat	Avg Teeth	Value	\$/Head	\$/Kg	Avg MSA Index	Avg LMY* %	Avg VBM Group
Grass Fed Steer	1.0	259.4	259.4	15	0	1400.76	1400.76	5.40	60.45	58.67	1
Grass Fed Heifer	14.0	3733.0	266.6	9	0	19879.18	1419.94	5.33	57.97	57.79	2
Total	15.0	3,992.4				21,279.94					

Value-based marketing feedback



Value-based marketing feedback



LMY % vs. MSA Index for Category

	Bottom 20% for quality, top 20% for yield	Average quality, top 20% for yield	Top 20% for both quality & yield
LMY %	Bottom 20% for quality, average yield	Average quality & yield	Top 20% for quality & average yield
	Bottom 20% for both quality & yield	Average quality, bottom 20% for yield	Top 20% for quality, bottom 20% for yield
		MSA Index	

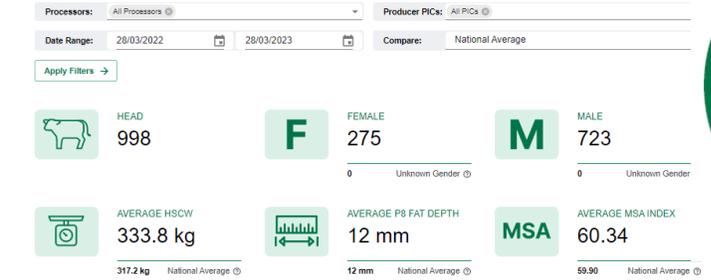
MLA's new "myFeedback"

One system, more data, better insights

- Combining carcase, eating quality and disease & defect data in one single access point (NLIS, MSA, AHA, NLRS)
- It is the only system that allows for aggregated industry benchmarking (National, State and Regional)
- System access will be available for all participating cattle and sheep producers (owners AND breeders), processors and brand owners
- New data linkages with NLRS have been established to quantify the lost opportunity cost of disease based on offal condemnations
- Linkages are provided with the 'Solutions to Feedback' library for all your information needs
- The 5 main producer analysis sections include:
 - Consignment overview (summary section)
 - Disease & Defect
 - Meat Standards Australia
 - Compliance & Comparisons (Grid Section)
 - Combined Reporting (Production Traits by Disease/Defect)
- myFeedback will include a new enhanced login experience, leveraging the myMLA single sign on process, allowing you to easily provide access to your data for: agistees, agents, advisors, veterinarians, farm workers etc.



Overview of All Consignments

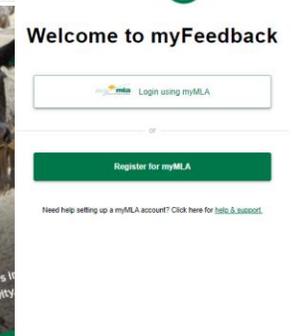


Consignments

Download Consignments

The below listed consignments represent cattle lots that have been consigned directly to a processing plant by this account's registered Property Identification Code (PIC) or will represent individual or lots of cattle that have been heard by this restricted PIC, as determined by electronic identification at slaughter.

Kill Date	Processor	Target Market	Feed Type
29/08/2022	Test Processor	ABC	Grass
20/06/2022	Test Processor	ABC	Grass
17/06/2022	Test Processor	ABC	Grass



Meat & Livestock Australia has developed a new supply chain feedback system.

myFeedback provides industry-first combined analytical reports using data from the National Livestock Identification System (NLIS), Meat Standards Australia (MSA), Animal Health Australia (AHA), and National Livestock Reporting Services (NLRS). This new system will replace and extend the existing Livestock Data Link (LDL) system with the addition of key MSA carcase feedback data and analytical capabilities.

myFeedback combines the benefits of carcase data and animal disease and defect data all in one streamlined system, enabling more accurate benchmarking of carcase performance for all users.

Benefits for producers:

- Understand how an animal meets market requirements by identifying more compliant livestock to grid specifications, to power your profit.
- Compare livestock's performance over time, and across regional, state or national benchmark performance at a regional, state or national level.
- Improve the compliance of future consignments by identifying and using processor feedback.
- Increase the value of your 'meat' (MNY) for beef and lamb by using MSA graded carcasses.

Benefits for processors:

- myFeedback combines the benefits of the MSA benchmarking system with animal disease and defect data into one streamlined system to enable informed decisions.
- A single-source platform enables processors to identify producers consistently meeting compliance metrics such as grid specifications, eating quality and disease and defect conditions.
- Support producers to increase their compliance and provides a baseline system to support access to a broader range of data.
- Add value to producer-suppliers and gain access to aggregated and deidentified data from across the supply chain to measure performance.
- Reduce opportunity costs associated with carcasses that do not meet requirements in carcase meat and offal.



Compliance to Grid Specifications by Trait

View % Levels

View Costs



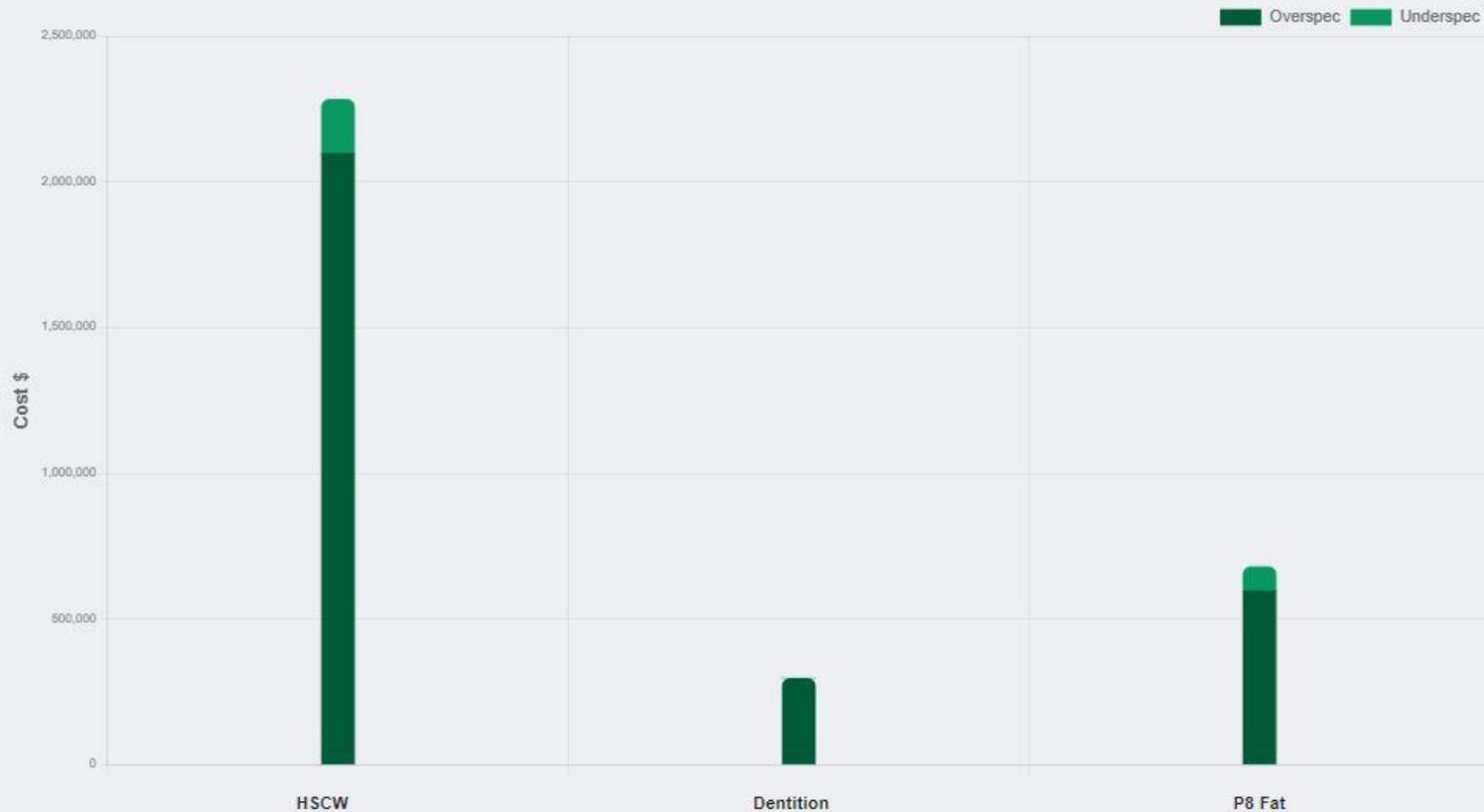
TOTAL LOST COST
\$2,490,953.49



OVERSPEC
\$2,294,616.05



UNDERSPEC
\$196,337.44



Non-Compliant Head	15,292	823	2,650
Non-Compliance Cost	\$2,281,999.44	\$296,026.48	\$676,337.44
Avg Cost per Head	\$149.23	\$359.57	\$258.21

MLA m



Take Home Messages

- Not meeting market specifications can be costly for your
- Genetics is responsible for a significant proportion of the gains made in productivity and profitability
- Your breeding objective traits needs to be linked to profit drivers
- Fit for Farm, Fit for Market
- Assess your product performance and aim to improve
- Good genetics does not fix bad management!



Resources and help

- [Meat Standards Australia Grading | Solutions to feedback \(mla.com.au\)](https://www.mla.com.au/meat-standards-australia-grading-solutions-to-feedback)
- [MLA Genetics | Australian Genetics](https://www.mla.com.au/mla-genetics-australian-genetics)
- Breedplan and Sheep Genetics websites
- [myFeedback \(mla.com.au\)](https://www.mla.com.au/myfeedback)
- [BredWell FedWell | Meat & Livestock Australia \(mla.com.au\)](https://www.mla.com.au/bredwell-fedwell)
- Trusted advisor
- Your processor / buyer

Thank you

Elke Hocking
Dr Farrah Preston
Prof Wayne Pitchford
Dr Sean Miller



Australian Government
**Department of Agriculture,
Fisheries and Forestry**



**Future
Drought
Fund**



**SA
DROUGHT
HUB**



**THE UNIVERSITY
of ADELAIDE**

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Penny Schulz M: 0417 853 094 E: penny.schulz@adelaide.edu.au