AN INITIATIVE OF

Making More From Sheep

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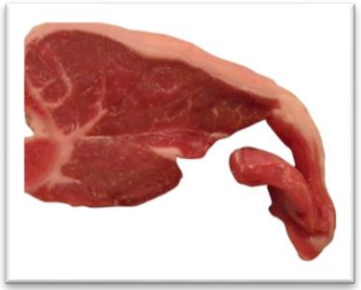
Setting your breeding objective- making money from breeding and selection

Dr Jason Trompf

Role of genetics…

Energy

Product



Labour and management

Setting goals to breed profitable sheep

- *Informing your objective*
- *Setting your objective*
- *Reviewing ram team*

- *Selecting rams and ewes (tools available)*
- *Enhancing gene flow through your flock*

Dead sheep Creek 5%

Knowledge Gap

Weaner Cliff
7%

Mt. Lamb Loss
700 ft

Industry at
the crossroads

Detour ahead

Lean
Meat
Alley

Variable
Season Rd

Wool Cutting

Wethers Exit

1. Informing your breeding objective

- *Calculate where your income is coming from- wool, meat, surplus ewes*
- *Benchmark your flock*
- *Audit flock's fitness levels*
- *Consumers- attributes and transparency*

Calculator of wool v meat & surplus sheep

	Total Head	$ per head	Total value
Stock at start of year			
Stock on hand at start		$	$
Purchases		$	$
Number of lambs weaned			
Total (A)			$
Stock at end of year			
Sales Lambs		$	$
Sales sheep		$	$
Deaths			
Closing numbers		$	$
Total (B)			$
Net income (or loss) from sheep sales (B minus A)			$ (C)

Number of bales sold	Bales (D)
Average weight per bale	Kg (E)
Total Greasy Kg (D x E)	Kg (F)
Average price per Kg (greasy)	$ (G)
Total income from wool (G x F)	$ **(H)**

Total income (C+H)	$ (I)
Percentage of income derived from meat (C ÷I)x100	**% (J)**
Percentage of income derived from wool (100 – J)	**%**

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Wool and reproduction

	Decrease ewe fleece value = $25
Meat Price $/kg	**Extra lambs required to break even**
$4	>50
$5	37
$6	25

Benchmarking your flock

- *Review current sire team*
- *DNA flock profiling*
- *Wether trials*

Auditing your flock's fitness

'the ability to survive, grow and reproduce in a particular environment' (Oxford Dictionary)

Auditing your flock's fitness

'the ability to survive, grow and reproduce in a particular environment' (Oxford Dictionary)

120 Foetuses

Single survival-80%

Twin survival -55%

80

Lambs marked

Lambs Lost (33%)

Auditing your flock's fitness

'the ability to survive, grow and reproduce in a particular environment' (Oxford Dictionary)

Ewe survival rates?

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Auditing your flock's fitness

'the ability to survive, grow and reproduce in a particular environment' (Oxford Dictionary)

Weaner survival rates?

Maiden ewe performance?

Auditing your flock's fitness

'the ability to survive, grow and reproduce in a particular environment' (Oxford Dictionary)

Ability to maintain condition score under nutritional stress?

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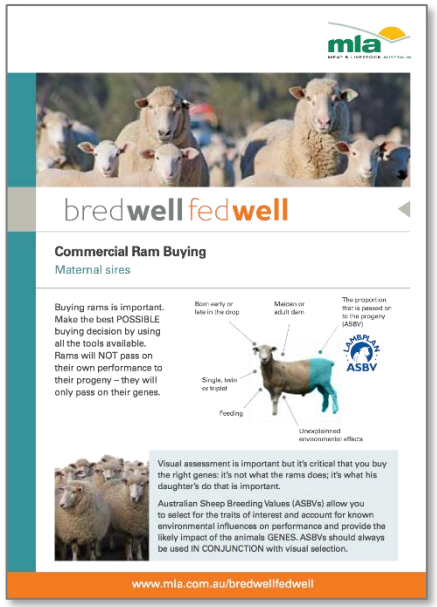
Transparency is no longer optional its expected

Today's consumers want to know:

- What's in their food and fibre
- How it's being produced
- Who's producing it
- How it will impact on their health

Brand integrity

2. Setting your breeding objective



bredwell fedwell



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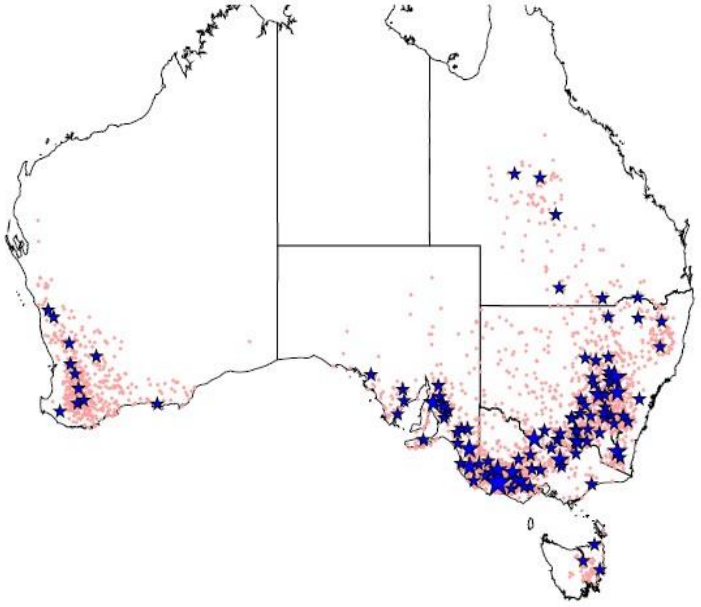

- 184 workshops
- 4336 participants (13 million ewes)
- 35% changed marking rate by 9%
- 20% gone onto LTEM
- Ave 8.8 out of 10

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Attendees- Bred Well

	Merino	Crossbred
• Self replacing flocks	• 67% (23%)	• 54% (28%)
• Use ASBVs when selecting rams	• 54%	• 69%
• Defined breeding objective	• 34%	• 27%
• Will use ASBVs from now on	• 97%	• 100%
• Understanding of how to use ASBVs improved due to BWFW	• 96%	• 96%

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To be fit for purpose

It’s all about balance!

		Current production levels	Future targets (10 years)	Difference
Wool Traits				
Wool cut	Kg/hd (adult)			
Micron	micron (adult)			
wool strength	N/ktex (adult)			
wool length	mm (adult)			
CV	% (adult)			
Carcase				
Weight	Kg (adult ewe)			
Liveweight at 7 months	kg			
Liveweight at 12 months	kg			
Average fat score when sold	score 1-5			
Carcase muscling		poor/ok/good	poor/ok/good	less/same/more
Reproduction				
Scanning	%			
Weaning	%			
Health and Labour saving				
Adult ewe drenches per year	No. Drenches			less/same/more
% of adult ewes with breech strike	%			
Wrinkle score in hoggets (see chart)	score 1-5			

	Trait Name	ASBV	High / Medium/ Low	Target percentile band	Target ASBV value
Wool cut	Yearling Clean fleece weight	YCFW			
Micron	Yearling Fibre diameter/micron	YFD			
wool strength	Yearling Staple strength	YSS			
wool length	Yearling Staple length	YSL			
CV	Coefficient of variation of FD	YFDCV			
Weight	Adult weight	AWT			
Liveweight at 7 months	Post-weaning weight	PWT			
Liveweight at 12 months	Yearling weight	YWT			
Fat score	Yearling Fat depth	YFAT			
Carcase muscling	Eye muscle depth	YEMD			
Scanning	Yearling weight	YWT			
Weaning	Number of lambs weaned	NLW			
Adult ewe drenches per year	Yearling Worm Egg Count	YWEC			
% adult ewes with breech strike	Dag score	LDAG			
Wrinkle score in hoggets	Breech wrinkle	EBWR			
Ewe resilience to low feed	Yearling Fat depth	YFAT			

Superfine	YCFW	YFD	YFDCV	YSL	YSS	EBWR	BWT	WWT	PWT	YWT	YFAT	YEMD	NLW	YWEC
High	50%	5%	20%	50%	30%	40%	1%	50%	50%	50%	20%	40%	40%	20%
Medium	60%	10%	30%	60%	40%	50%	5%	60%	60%	60%	30%	50%	50%	30%
Low	80%	20%	40%	80%	50%	60%	10%	70%	70%	70%	40%	60%	60%	50%

Fine

YCFW	YFD	YFDCV	YSL	YSS	EBWR	BWT	WWT	PWT	YWT	YFAT	YEMD	NLW	YWEC
20%	30%	40%	30%	50%	40%	40%	30%	20%	30%	30%	40%	30%	30%
30%	40%	50%	40%	60%	50%	50%	40%	30%	40%	40%	50%	40%	40%
40%	50%	60%	50%	70%	60%	60%	50%	40%	50%	50%	60%	50%	50%

Medium

YCFW	YFD	YFDCV	YSL	YSS	EBWR	BWT	WWT	PWT	YWT	YFAT	YEMD	NLW	YWEC
20%	50%	40%	10%	20%	20%	50%	5%	5%	10%	30%	30%	20%	30%
30%	60%	50%	20%	30%	30%	60%	10%	10%	20%	40%	40%	30%	40%
40%	70%	60%	30%	40%	40%	70%	20%	20%	30%	50%	50%	40%	50%

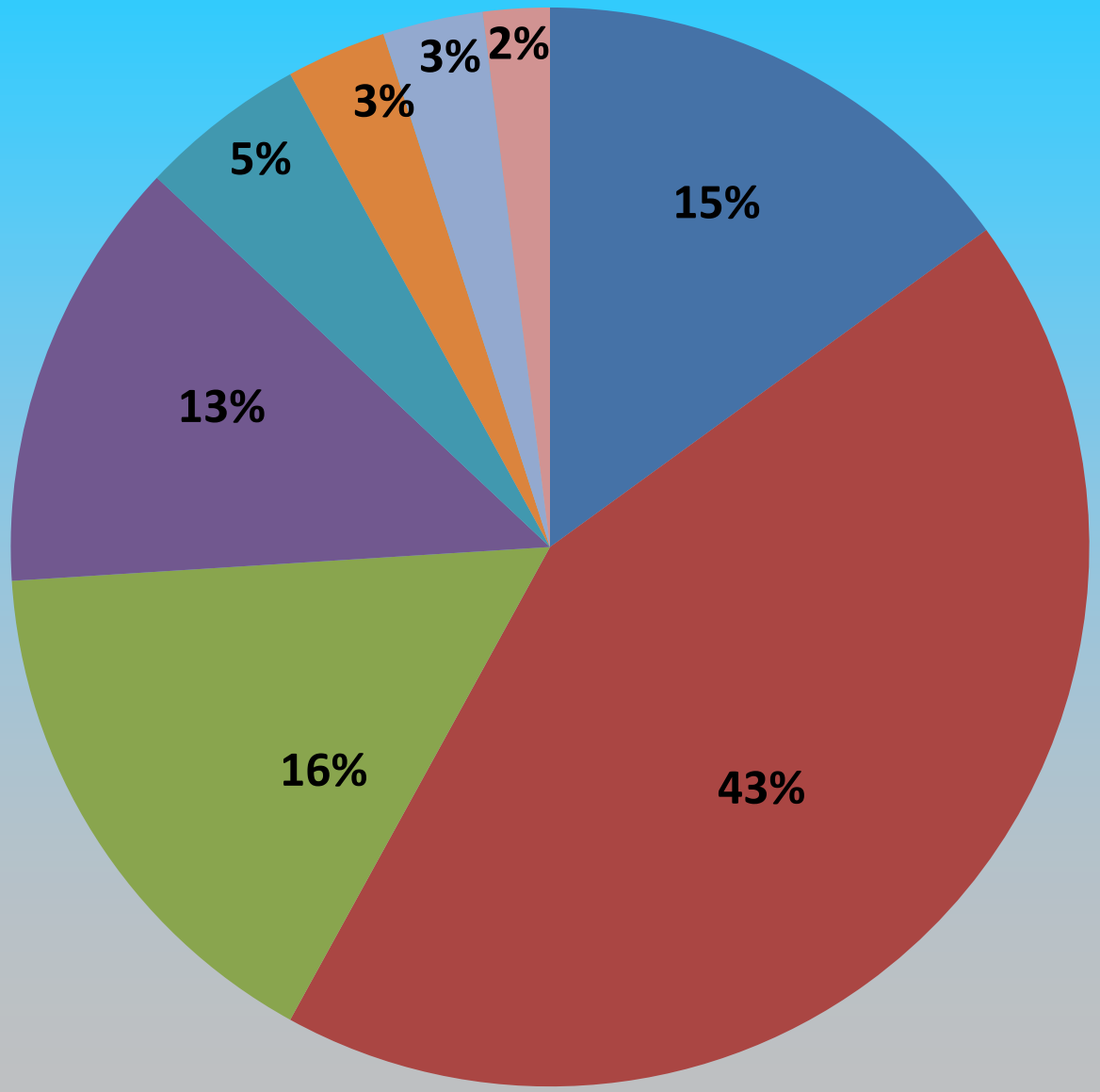
ASBV and Index Percentile Band Table

Analysis **MERINO** Run date **21-Jan-15**

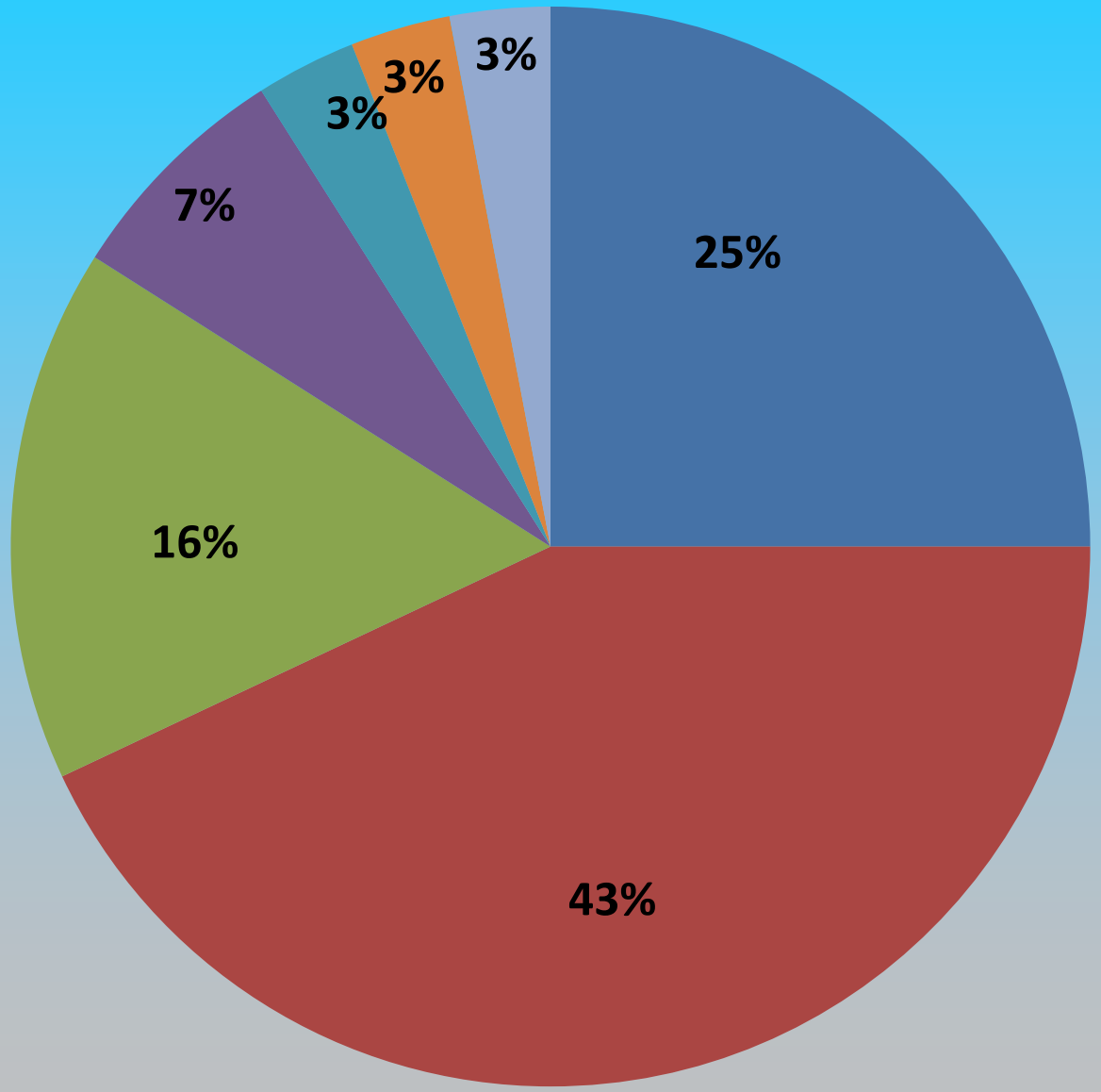
Animals born in 2013

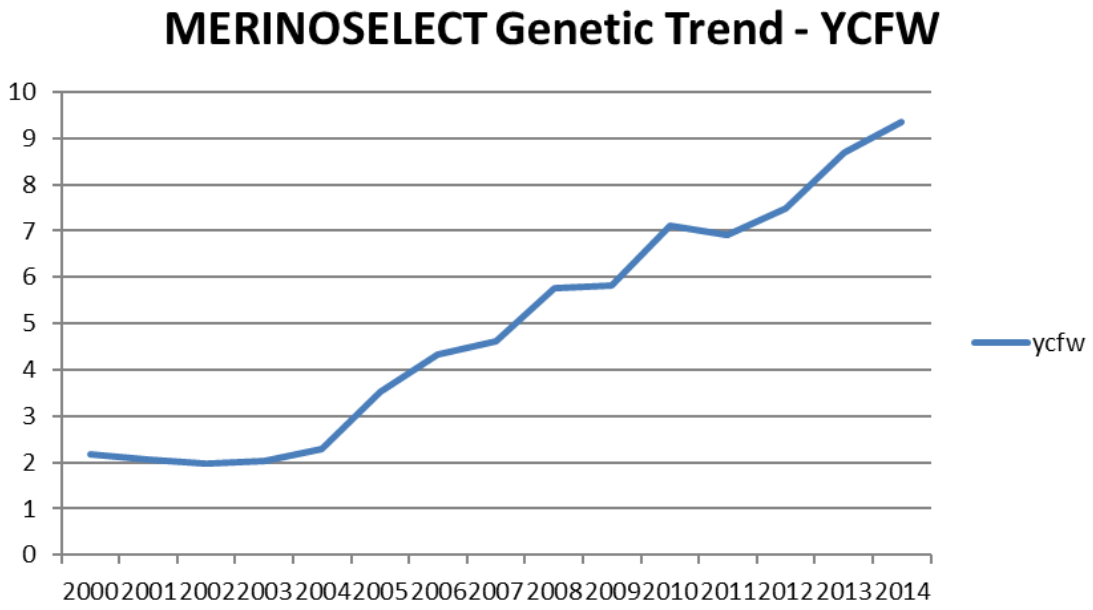
Band	Yfd u	Ycfw %	Yfdcv %	Ysl mm	Yss Nktex	NLW %	Ysc cm	Ywec %	Ywt kg	Yfat mm	Yemd mm	DP+	MP+	FP+
0	-5.8	47.8	-4.1	33.5	11.5	21	4.5	-98	14.9	3.2	5.0	216.7	204.0	179.7
1	-4.2	30.0	-2.7	21.2	6.4	13	3.5	-82	10.7	1.7	3.0	182.3	175.0	161.9
2	-3.5	27.7	-2.5	19.6	5.6	12	3.3	-74	10.0	1.5	2.7	176.3	170.3	158.4
3	-3.2	26.4	-2.4	18.5	5.1	11	3.1	-68	9.5	1.4	2.5	172.2	167.5	156.1
4	-3.0	25.5	-2.3	17.5	4.7	11	3.0	-63	9.2	1.3	2.3	169.2	165.2	154.3
5	-2.9	24.7	-2.2	16.7	4.4	10	2.9	-60	8.9	1.2	2.2	166.8	163.2	152.9
10	-2.5	21.8	-2.0	13.7	3.5	8	2.6	-49	7.8	1.0	1.8	158.3	156.3	147.7
15	-2.3	19.6	-1.8	11.9	2.9	7	2.4	-41	7.1	0.8	1.6	152.8	151.5	144.0
20	-2.1	18.0	-1.6	10.7	2.4	6	2.2	-36	6.5	0.7	1.4	148.7	147.5	140.9
25	-1.9	16.4	-1.5	9.8	2.0	5	2.0	-31	6.0	0.6	1.2	145.1	144.1	138.2
30	-1.7	14.9	-1.4	9.0	1.7	4	1.9	-27	5.5	0.5	1.0	142.2	141.0	135.8
35	-1.6	13.6	-1.3	8.2	1.3	3	1.8	-23	5.1	0.4	0.9	139.5	138.1	133.8
40	-1.5	12.2	-1.2	7.4	1.0	3	1.6	-20	4.6	0.3	0.7	137.0	135.5	131.9
45	-1.3	11.0	-1.0	6.6	0.7	2	1.5	-17	4.2	0.2	0.6	134.7	133.0	130.0
50	-1.2	9.7	-0.9	5.8	0.4	2	1.4	-13	3.8	0.1	0.5	132.6	130.6	128.3
55	-1.1	8.4	-0.8	4.9	0.1	1	1.3	-10	3.3	0.1	0.4	130.3	128.4	126.6
60	-1.0	7.2	-0.7	4.0	-0.2	0	1.1	-7	2.9	0.0	0.3	128.2	126.3	124.8
65	-0.8	5.8	-0.6	3.0	-0.5	0	1.0	-3	2.4	-0.1	0.2	126.1	124.3	123.0
70	-0.7	4.3	-0.5	1.9	-0.8	-1	0.9	1	1.9	-0.2	0.0	123.8	122.1	121.1
75	-0.5	2.6	-0.3	0.7	-1.2	-2	0.7	5	1.3	-0.2	-0.1	121.3	119.8	119.0
80	-0.4	0.8	-0.2	-0.6	-1.6	-3	0.5	10	0.7	-0.3	-0.2	118.3	117.5	116.5
85	-0.2	-1.4	0.0	-2.0	-2.1	-4	0.3	16	0.0	-0.4	-0.4	114.8	114.7	113.4
90	0.0	-4.1	0.2	-3.9	-2.7	-5	0.0	23	-0.9	-0.6	-0.6	110.1	111.2	109.8
95	0.4	-8.4	0.6	-6.4	-3.8	-8	-0.6	34	-2.1	-0.8	-0.9	102.8	105.4	105.4
96	0.5	-9.6	0.7	-7.1	-4.2	-9	-0.9	38	-2.4	-0.8	-1.0	100.6	103.3	104.3
97	0.6	-11.2	0.9	-8.0	-4.6	-11	-1.2	43	-2.8	-0.9	-1.1	97.2	100.3	102.9
98	0.8	-13.5	1.1	-9.2	-5.3	-13	-1.7	49	-3.3	-1.0	-1.2	91.8	96.7	100.9
99	1.1	-18.0	1.4	-11.4	-6.3	-18	-2.2	58	-4.1	-1.2	-1.5	80.3	88.6	97.3
100	3.3	-39.3	4.8	-20.1	-14.8	-30	-5.0	138	-10.1	-2.1	-3.5	14.4	48.8	74.1

Breeding objective- Merino

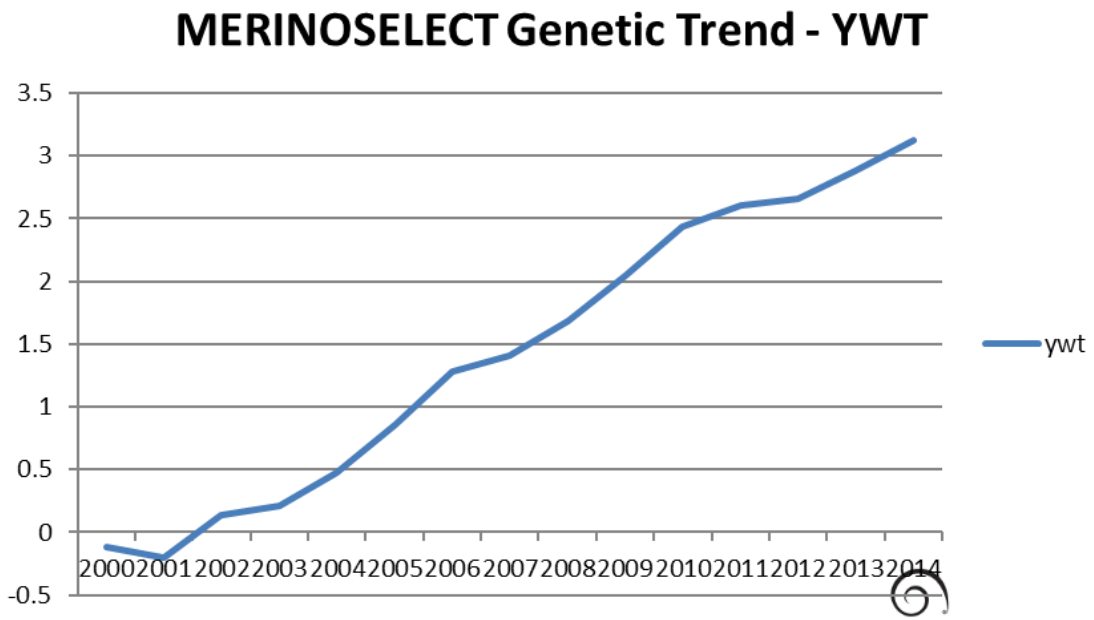


Breeding objective- Crossbred





Industry making gains



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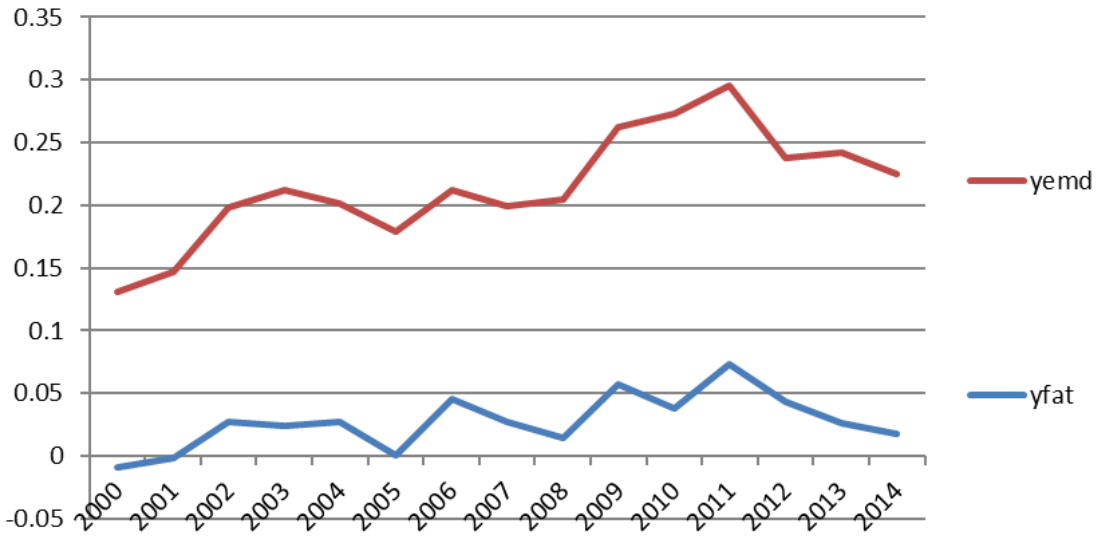
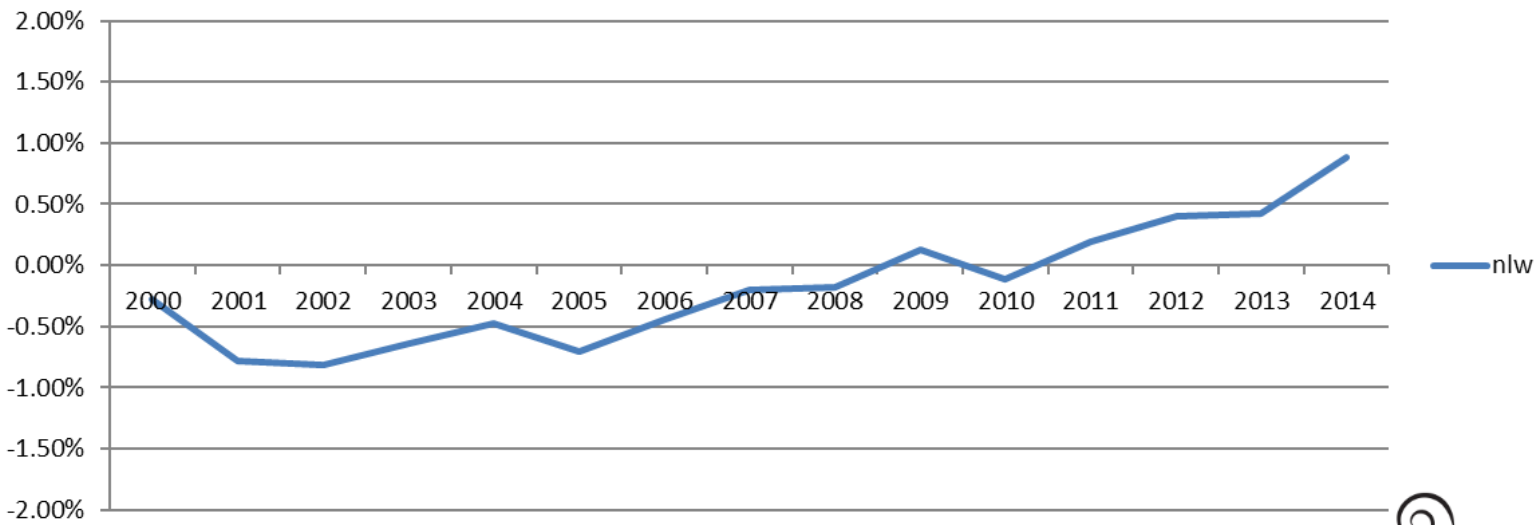
MERINOSELECT Genetic Trend - Carcase



Industry going no where

MERINOSELECT Genetic Trend - NLW



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ASBV and Index Percentile Band Table

Analysis **MERINO** Run date **21-Jan-19**

Exploiting the opportunity

Animals born in 2017

Band	Yfd u	Ycfw %	Yfdcv %	Ysl mm	Yss Nktex	NLW %	Ysc cm	Ywec %	Pwt kg	Ywt kg	Yfat mm	Yemd mm	DP+	MP+	FP+
0	-6.2	50.8	-3.9	33.1	12.1	24	6.1	-94	12.7	16.3	3.6	5.9	233.8	221.7	195.7
1	-3.7	32.5	-2.6	22.9	7.0	16	4.3	-81	8.5	11.5	1.9	3.1	193.9	187.9	169.8
2	-3.3	30.4	-2.4	21.1	6.0	14	4.1	-74	8.0	10.8	1.7	2.8	185.8	180.0	164.2
3	-3.1	29.0	-2.2	20.0	5.4	13	3.9	-69	7.6	10.4	1.6	2.6	180.3	175.2	160.8
4	-2.9	28.0	-2.1	19.1	5.0	12	3.7	-65	7.3	10.0	1.5	2.5	176.2	171.9	158.3
5	-2.8	27.1	-2.1	18.3	4.7	11	3.6	-62	7.1	9.7	1.4	2.4	173.0	169.3	156.4
10	-2.4	24.2	-1.8	15.3	3.6	9	3.2	-53	6.3	8.7	1.2	2.0	164.0	161.8	150.4
15	-2.1	22.2	-1.6	13.5	3.0	7	2.9	-46	5.6	8.0	1.0	1.6	159.1	157.4	146.8
20	-1.9	20.6	-1.4	12.1	2.5	6	2.6	-40	5.2	7.4	0.8	1.4	155.4	154.1	144.2
25	-1.8	19.3	-1.3	10.9	2.0	5	2.5	-36	4.7	6.9	0.6	1.2	152.3	151.3	142.0
30	-1.6	18.1	-1.2	9.9	1.7	5	2.3	-31	4.3	6.4	0.5	1.0	149.7	148.8	139.9
35	-1.5	17.0	-1.1	9.0	1.3	4	2.1	-27	4.0	6.0	0.4	0.8	147.2	146.3	138.1
40	-1.4	16.0	-0.9	8.2	1.0	3	2.0	-23	3.6	5.5	0.3	0.6	145.0	144.1	136.4
45	-1.2	15.0	-0.8	7.5	0.6	2	1.8	-20	3.3	5.1	0.2	0.5	142.8	141.8	134.7
50	-1.1	13.9	-0.7	6.8	0.3	2	1.7	-16	3.0	4.7	0.1	0.3	140.5	139.7	133.0
55	-1.0	12.9	-0.6	6.0	0.0	1	1.5	-12	2.6	4.3	0.0	0.2	138.3	137.5	131.3
60	-0.9	11.8	-0.5	5.3	-0.3	0	1.4	-9	2.3	3.8	-0.1	0.1	136.1	135.3	129.6
65	-0.8	10.6	-0.4	4.4	-0.7	0	1.2	-4	1.9	3.4	-0.2	-0.1	133.8	132.9	127.7
70	-0.6	9.3	-0.2	3.5	-1.0	-1	1.1	1	1.5	2.9	-0.3	-0.2	131.3	130.4	125.7
75	-0.5	7.9	-0.1	2.5	-1.4	-2	0.9	6	1.1	2.4	-0.4	-0.3	128.5	127.6	123.3
80	-0.3	6.2	0.1	1.2	-1.9	-3	0.7	13	0.7	1.9	-0.5	-0.5	125.3	124.4	120.5
85	-0.1	4.2	0.3	-0.3	-2.4	-4	0.4	20	0.1	1.3	-0.6	-0.6	121.2	120.8	116.8
90	0.2	1.4	0.5	-2.3	-3.1	-6	0.2	29	-0.5	0.5	-0.7	-0.8	115.5	115.9	111.4
95	0.7	-3.4	0.9	-5.3	-4.3	-9	-0.3	41	-1.4	-0.7	-0.9	-1.1	106.4	107.5	103.1
96	0.9	-5.0	1.0	-6.1	-4.7	-10	-0.5	44	-1.7	-1.0	-1.0	-1.2	103.5	104.4	100.5
97	1.1	-6.9	1.1	-7.2	-5.1	-11	-0.7	48	-2.0	-1.4	-1.1	-1.3	99.3	99.3	96.3
98	1.4	-9.9	1.3	-8.4	-5.8	-14	-0.9	53	-2.4	-2.0	-1.1	-1.5	93.3	89.4	86.8
99	2.0	-14.1	1.7	-10.3	-6.9	-22	-1.3	63	-3.1	-3.0	-1.3	-1.8	82.9	72.3	60.1
100	6.7	-37.5	3.7	-22.0	-13.0	-43	-3.5	118	-8.8	-11.7	-2.3	-4.1	0.0	32.5	19.8

Percentile Report

Analysis **MATERNAL** Dated **15-May-19**

Animals born in 2018 **Count 69001**

Band	Bwt kg	Wwt kg	Mwwt kg	Pwwt kg	Pfat mm	Pemd mm	Ywt kg	Yfat mm	Yemd mm	Ygfw %	Yfd u	Pfec %	NLW %	YNLW %	PSC cm	Awt kg	MCP+	BLX	MWP+	Mat $
0	-0.3	14.9	3.4	20.4	3.8	5.5	22.9	4.6	4.7	28	-4.6	-91	30	35	8.6	27.0	172.6	**165.1**	225.2	**192.8**
1	0.1	11.5	1.8	17.3	0.9	3.2	18.7	1.1	2.7	24	-4.5	-76	21	26	6.0	20.2	158.9	**149.3**	205.8	**172.7**
2	0.1	11.2	1.6	16.7	0.7	2.9	18.0	0.9	2.4	23	-4.0	-70	20	24	5.7	19.4	156.5	**147.2**	202.0	**169.8**
3	0.1	10.9	1.5	16.3	0.5	2.6	17.5	0.7	2.3	22	-4.0	-66	19	22	5.5	18.9	155.0	**145.8**	199.7	**168.1**
4	0.2	10.8	1.4	16.0	0.4	2.5	17.2	0.5	2.1	22	-3.5	-64	18	21	5.4	18.5	153.7	**144.7**	198.1	**166.6**
5	0.2	10.6	1.3	15.8	0.4	2.4	16.9	0.4	2.1	22	-3.3	-62	17	20	5.3	18.2	152.7	**143.8**	196.8	**165.6**
10	0.3	10.1	1.0	15.0	0.1	2.0	16.1	-0.1	1.7	20	-2.3	-53	16	18	4.9	17.1	149.0	**140.4**	192.0	**161.6**
15	0.3	9.8	0.9	14.4	-0.1	1.7	15.5	-0.3	1.5	19	-2.0	-47	15	16	4.7	16.5	146.3	**138.0**	188.7	**158.6**
20	0.3	9.5	0.7	14.0	-0.2	1.5	15.1	-0.5	1.4	18	-1.8	-42	14	15	4.5	15.9	144.1	**135.9**	186.0	**156.0**
25	0.4	9.2	0.6	13.6	-0.3	1.4	14.7	-0.7	1.3	17	-1.7	-37	13	14	4.4	15.5	142.0	**133.9**	183.6	**153.6**
30	0.4	9.0	0.5	13.3	-0.4	1.2	14.4	-0.8	1.2	16	-1.7	-33	12	13	4.3	15.0	139.9	**132.2**	181.4	**151.5**
35	0.5	8.7	0.4	13.0	-0.5	1.1	14.1	-0.9	1.1	15	-1.6	-30	11	12	4.1	14.6	138.0	**130.7**	179.2	**149.5**
40	0.5	8.5	0.3	12.6	-0.6	1.0	13.7	-1.0	1.0	15	-1.6	-27	10	11	4.0	14.2	136.3	**129.2**	177.2	**147.7**
45	0.5	8.3	0.2	12.3	-0.7	0.9	13.4	-1.1	0.9	14	-1.5	-23	10	10	3.9	13.9	134.8	**127.9**	175.1	**145.9**
50	0.5	8.1	0.1	12.0	-0.7	0.7	13.1	-1.2	0.8	13	-1.4	-20	9	9	3.7	13.5	133.4	**126.6**	173.1	**144.2**
55	0.5	7.8	0.0	11.7	-0.8	0.6	12.7	-1.3	0.7	13	-1.4	-16	8	8	3.6	13.1	131.9	**125.3**	170.9	**142.5**
60	0.6	7.6	-0.1	11.3	-0.9	0.5	12.3	-1.4	0.6	12	-1.3	-13	7	7	3.5	12.6	130.4	**124.0**	168.6	**140.7**
65	0.6	7.3	-0.3	10.9	-0.9	0.4	11.9	-1.5	0.5	12	-1.2	-10	7	7	3.3	12.1	128.9	**122.6**	166.1	**139.0**
70	0.6	6.9	-0.4	10.5	-1.0	0.2	11.3	-1.6	0.4	11	-1.1	-6	6	6	3.2	11.6	127.2	**121.1**	163.4	**137.0**
75	0.7	6.5	-0.5	9.9	-1.1	0.1	10.6	-1.7	0.2	10	-1.1	-1	5	5	3.0	11.0	125.4	**119.4**	160.1	**134.7**
80	0.7	6.0	-0.6	9.1	-1.2	-0.1	9.9	-1.8	0.1	9	-1.0	5	4	4	2.7	10.4	123.5	**117.3**	156.3	**132.0**
85	0.7	5.4	-0.8	8.2	-1.3	-0.2	9.0	-2.0	0.0	8	-0.9	11	2	3	2.4	9.6	120.8	**114.9**	151.9	**128.7**
90	0.8	4.7	-1.0	7.2	-1.5	-0.4	8.0	-2.1	-0.2	7	-0.7	20	1	2	2.1	8.6	117.0	**112.0**	146.2	**124.6**
95	0.8	3.7	-1.3	5.6	-1.7	-0.6	6.3	-2.4	-0.4	6	-0.5	34	-1	0	1.7	7.0	111.4	**108.1**	136.3	**118.4**
96	0.8	3.5	-1.4	5.2	-1.8	-0.7	5.8	-2.5	-0.5	5	-0.5	39	-2	-1	1.5	6.5	110.0	**107.1**	133.0	**116.9**
97	0.8	3.2	-1.5	4.7	-1.9	-0.8	5.2	-2.6	-0.5	5	-0.4	44	-3	-2	1.4	5.8	108.6	**105.9**	128.8	**115.1**
98	0.9	2.8	-1.7	4.1	-2.0	-0.9	4.5	-2.7	-0.6	4	-0.4	51	-3	-3	1.2	5.0	106.9	**104.5**	124.2	**112.8**
99	0.9	2.4	-1.9	3.4	-2.1	-1.1	3.6	-2.9	-0.8	2	-0.3	66	-5	-5	0.8	3.6	104.5	**102.4**	118.2	**109.7**
100	1.2	-1.0	-3.3	-1.1	-3.2	-2.3	-1.4	-4.1	-1.8	-1	0.3	177	-20	-16	-2.9	-2.1	92.8	**86.2**	92.0	**87.9**

3. Selecting and breeding better sheep

- *A clear breeding objective*
- *Use the best visual and objective tools available to….*
- *Breed a balanced-high performing sheep*

The tools to breed better sheep

Ram selection

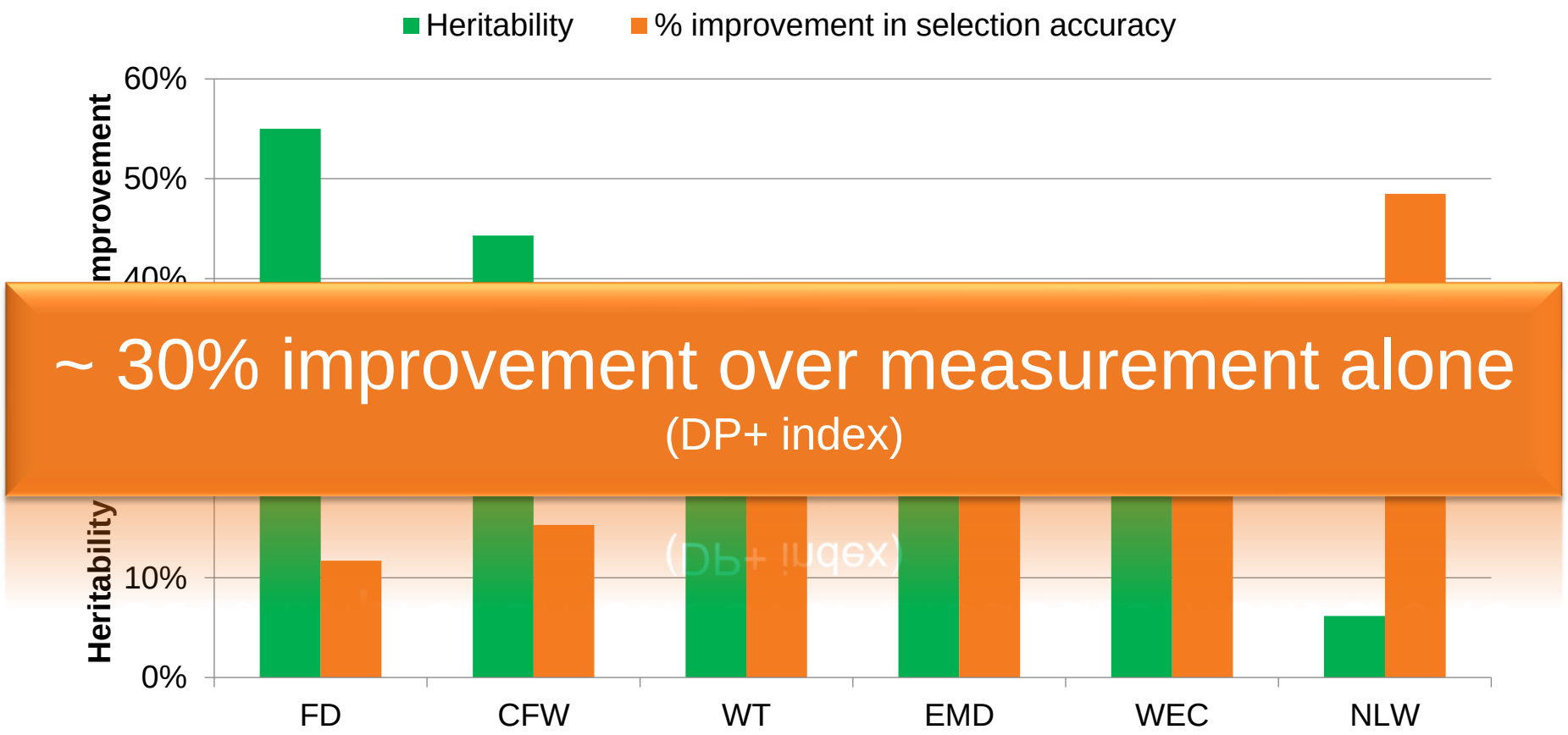
- Australian Sheep Breeding Values (ASBVs)
- Sire evaluations/progeny test (AMSEA)
- Bloodline evaluations (wether, ewe trials)

Ewe selection

- Visual & Structural assessment (Classing)
- Mating Decisions (matching rams to ewes)
- On-farm evaluations (trialling sires)
- Culling Decisions (within your flock)

ASBVs improve selection accuracy

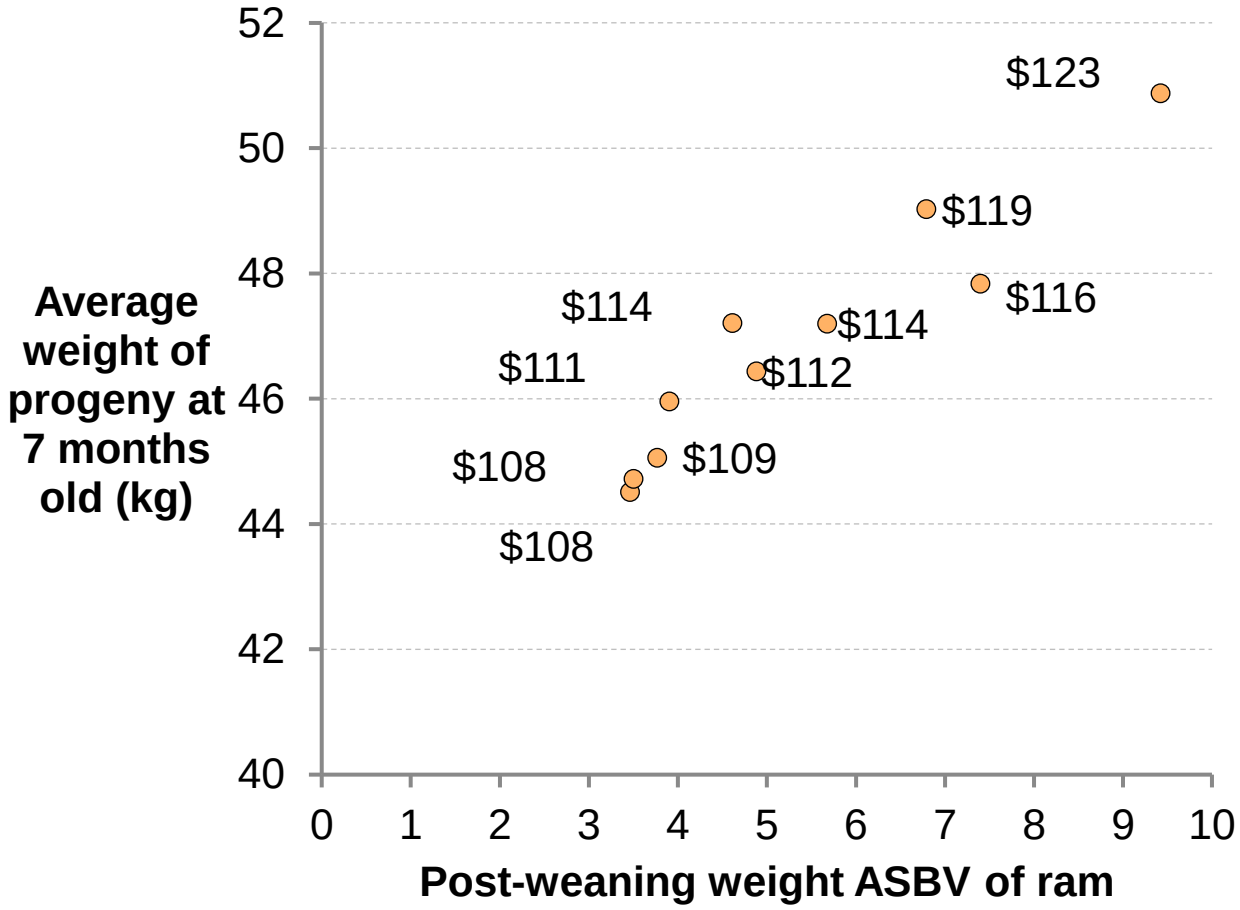
(improvement in within flock selection accuracy)



~ 30% improvement over measurement alone

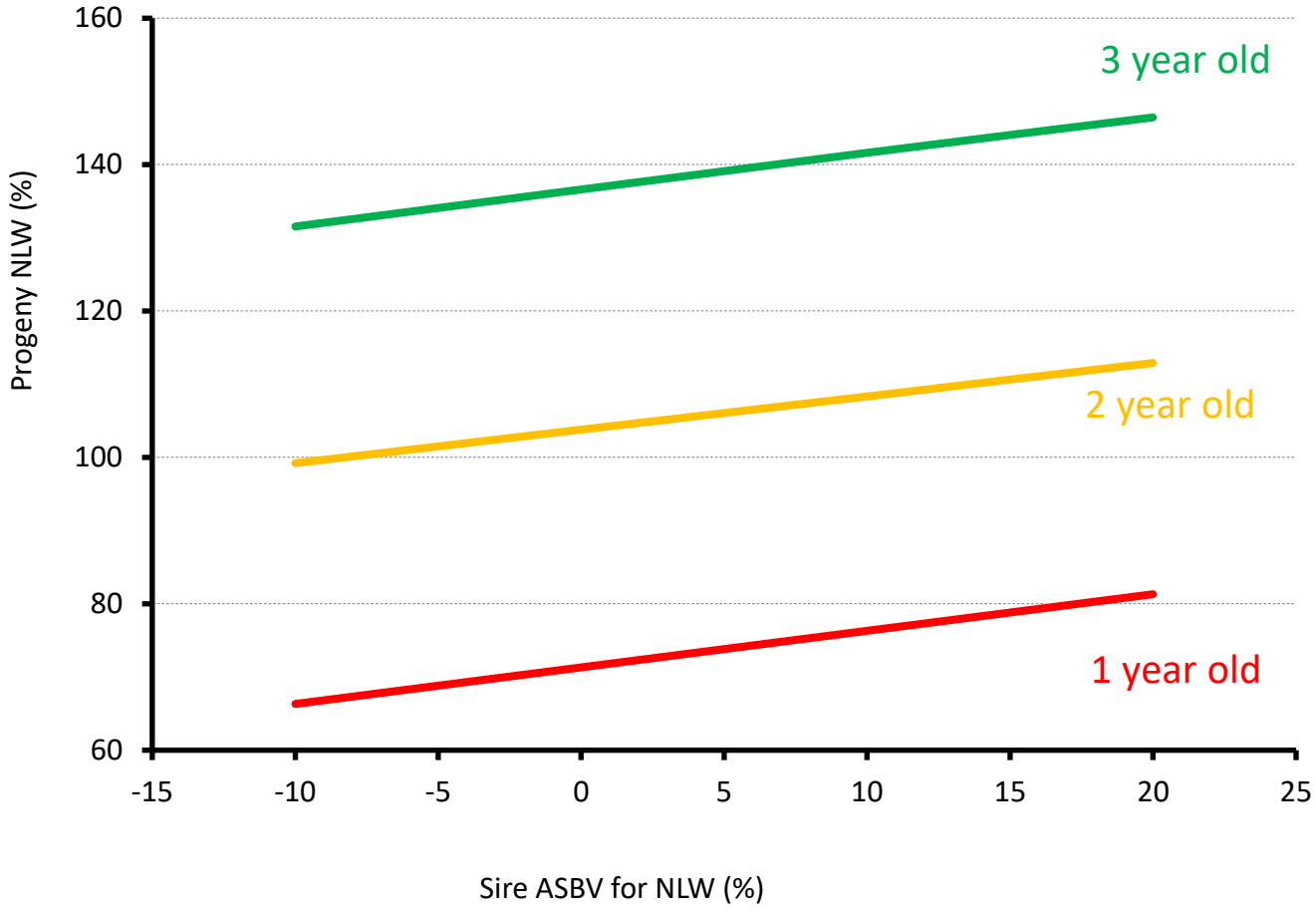
(DP+ index)

Post-weaning weight (PWT)



Source: MEF data 2009 drop

Impact of selection for NLW

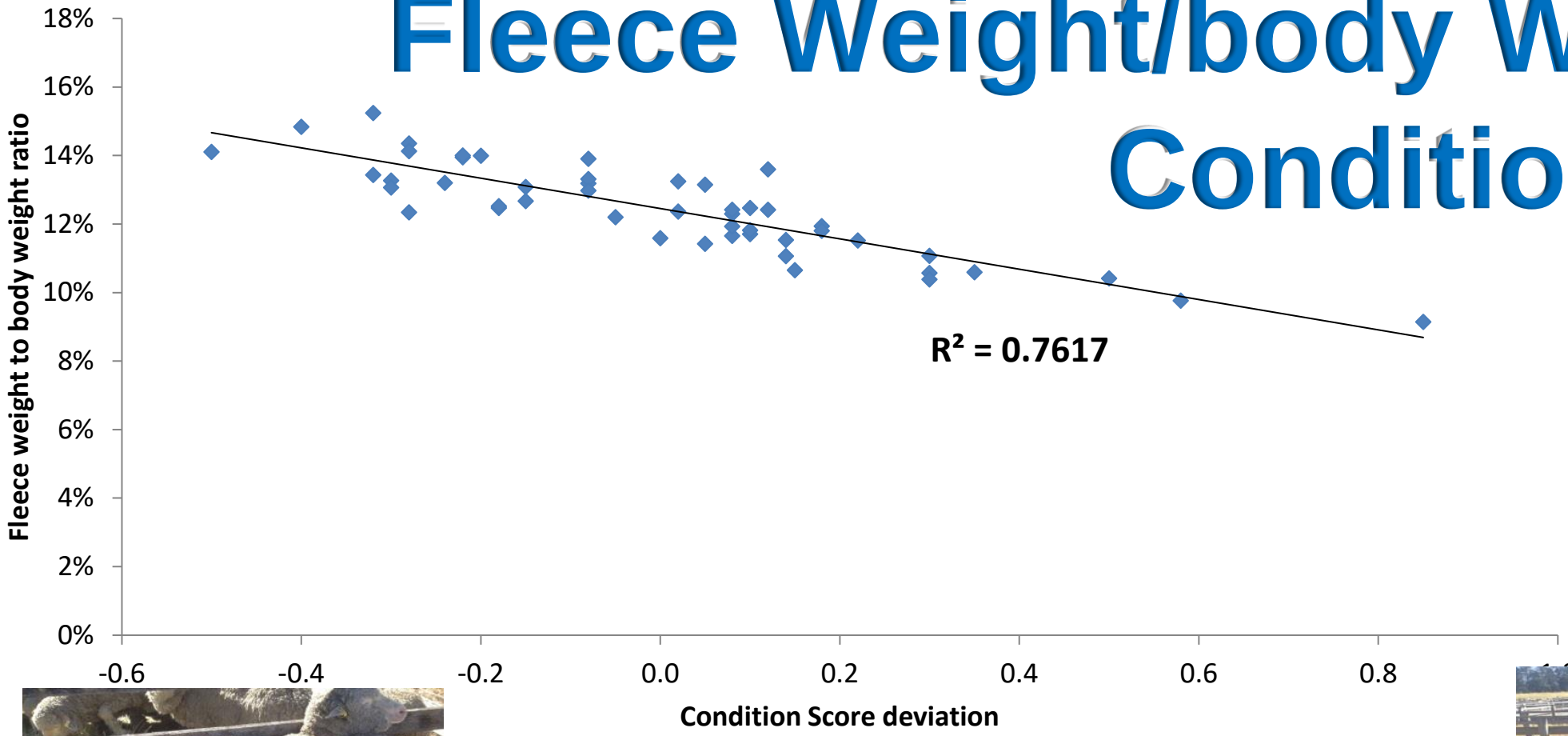


Farmer case study – John Keilor, Cashmore Maternals 2014

In this case study, the overall impact of sire NLW was 0.5% extra lambs marked per 1% change in sire NLW.

Source: Farmer case study – Cashmore Maternals 2014

Fleece Weight/body Weight v Condition score



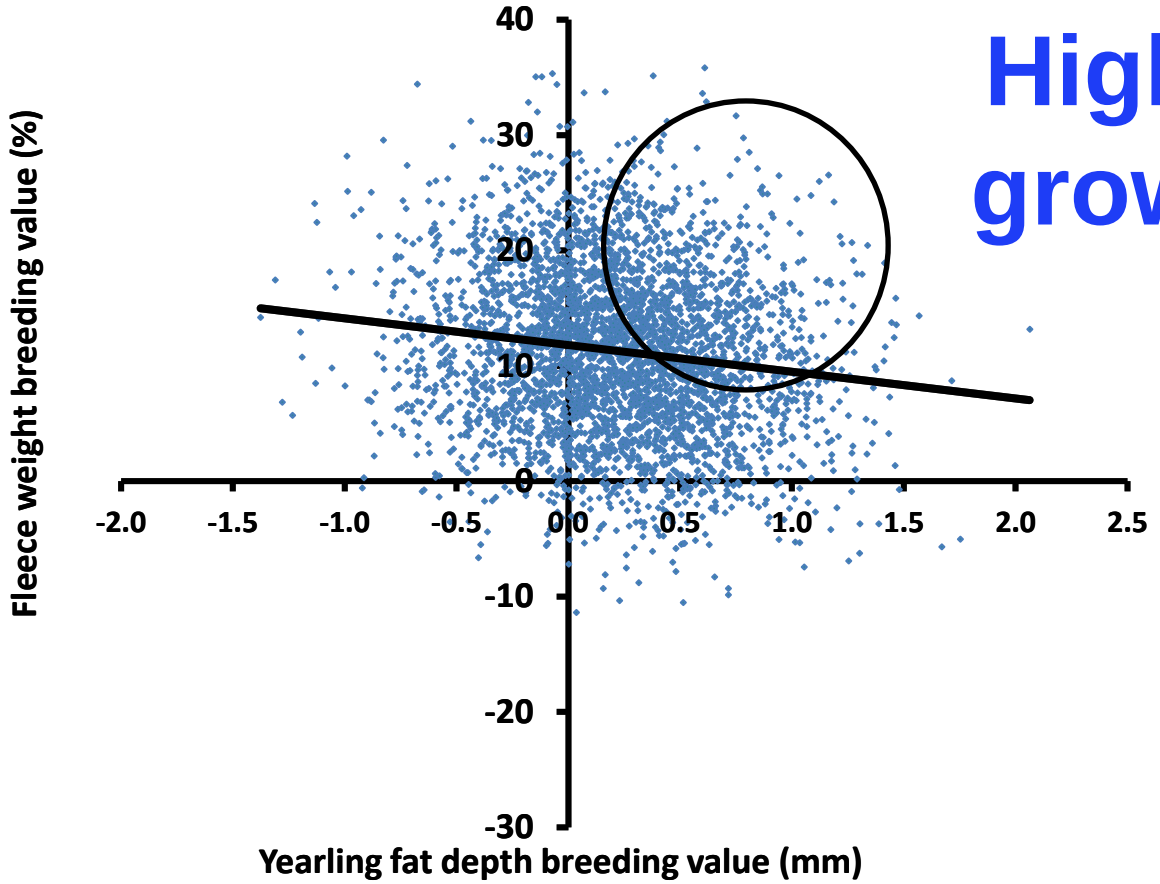
Source: Peter Westblade Memorial Merino Challenge 2014-2016

Genetic fat...

..the argument

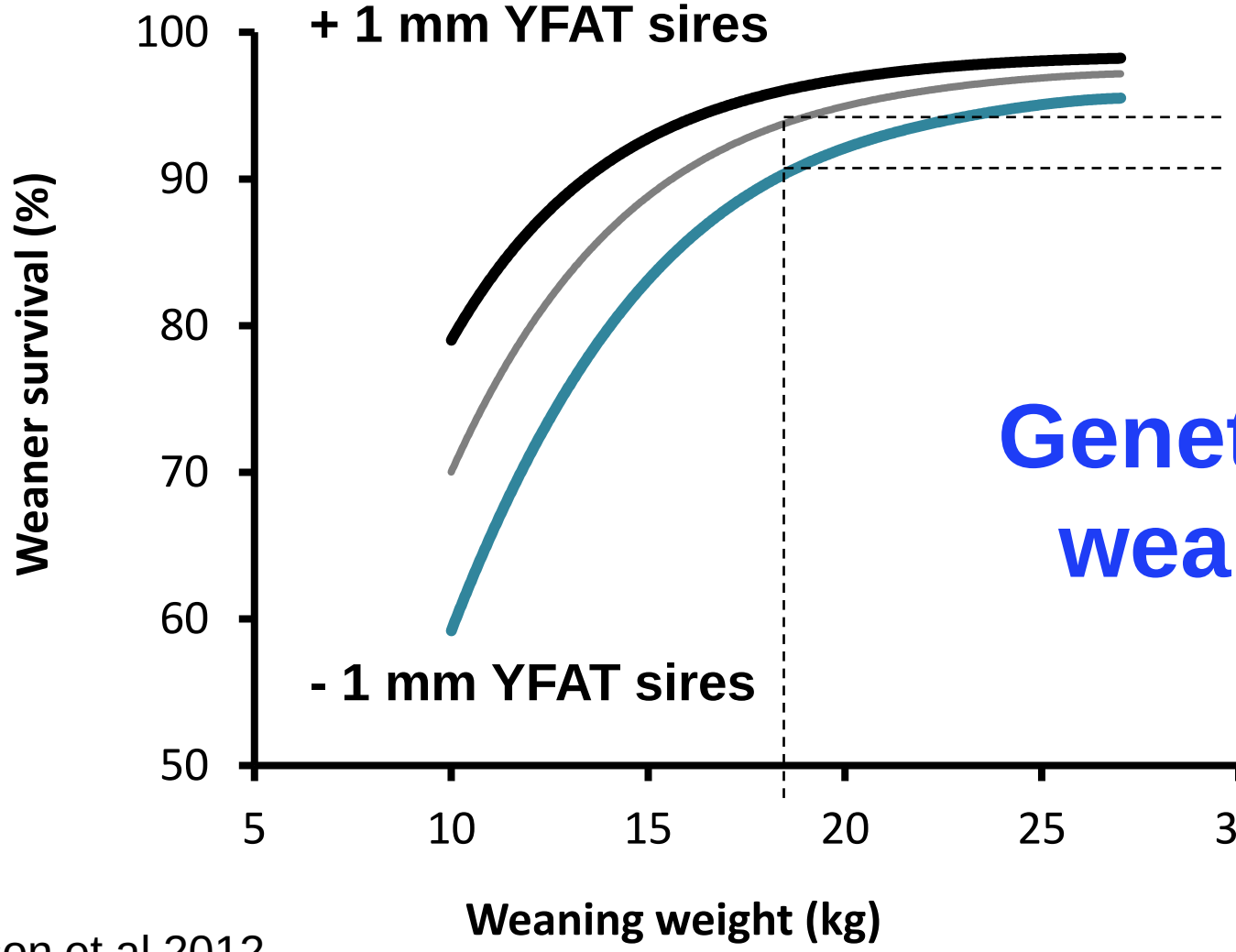
against

High fat sheep grow less wool



Lots of scope to do both with careful selection

More lambs survive after weaning



1 mm YFAT = 4% weaners at 18kg

Genetic fat reduces weaner mortality

Source: Thompson et al 2012

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Genetics and Condition score

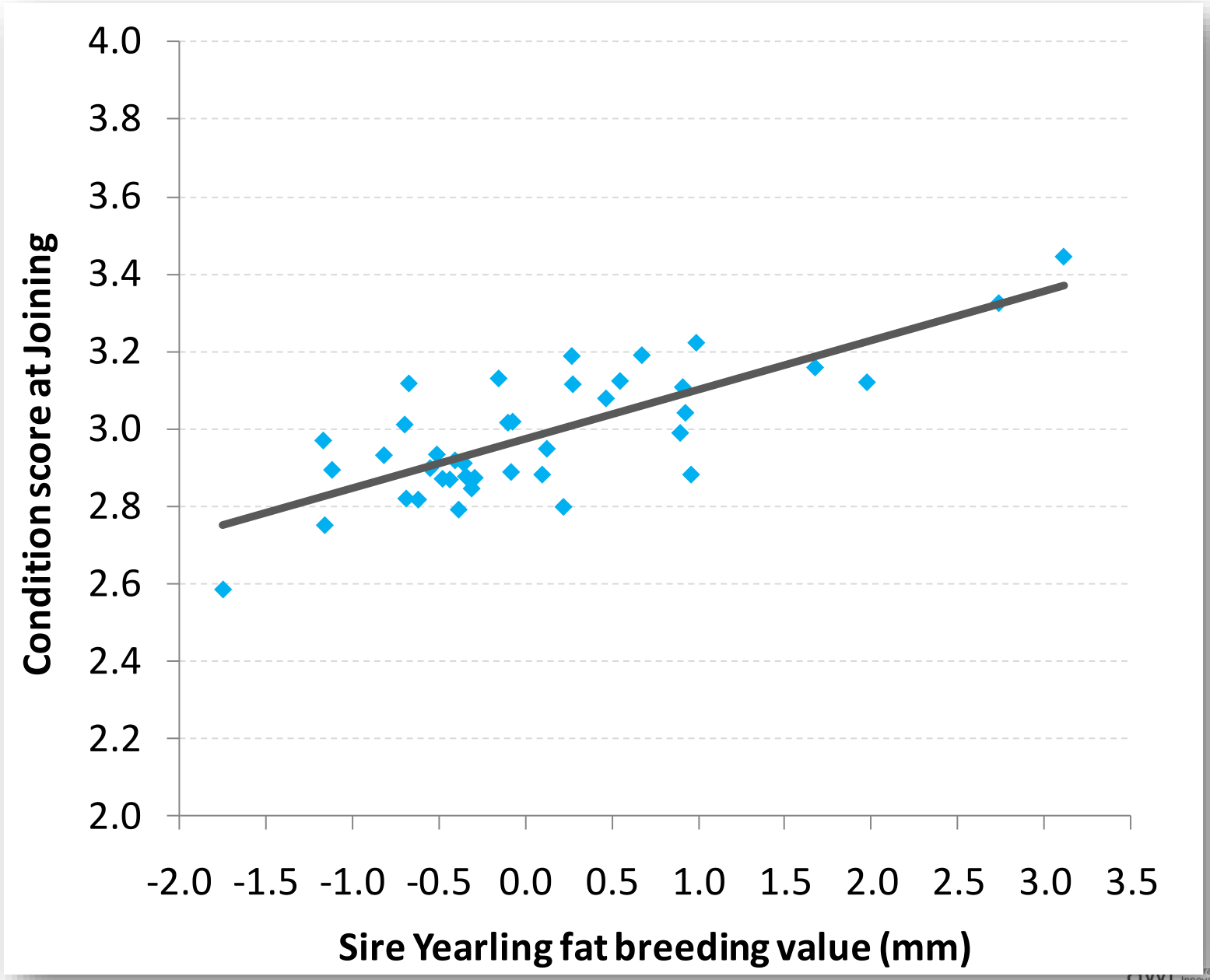
The actual condition score of a sheep is governed by

25% genes and 75% environment

Genetic trait not yet available however…….

There is a correlation with YFAT and YEMD

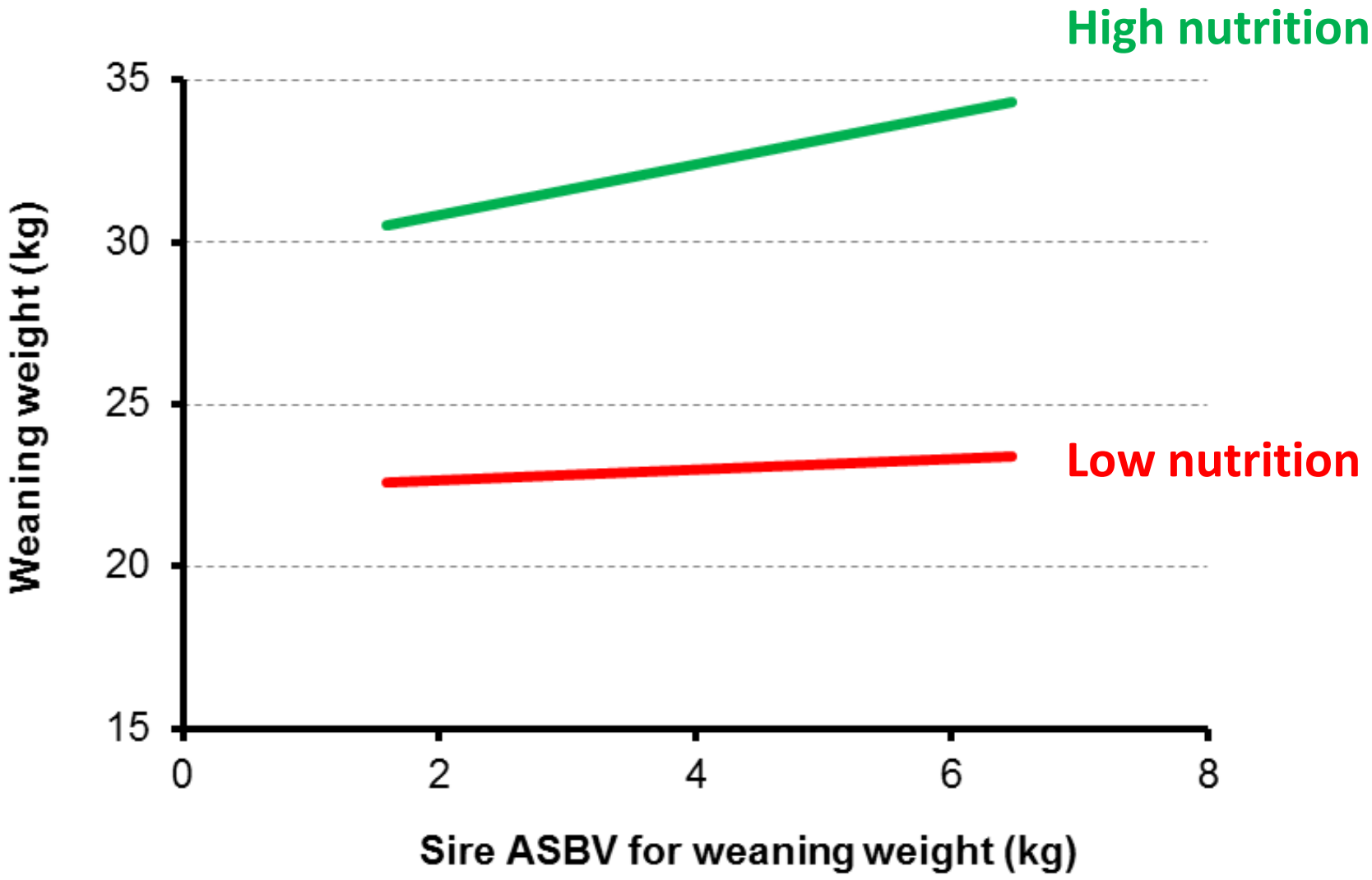
Reduce the cost of production



4. Enhancing gene flow

- *Number of live progeny per ram*
- *Differential management singles & twins*
- *Culling rate of maidens*
- *Number of lambs from 1st and 2nd lambing*
- *Wet-drying ewes*
- *Age profile of ram team and ewe flock*

Genes for growth drive weaning weight- but only if you feed them



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Setting goals to breed profitable sheep

- *Informing your objective*
- *Setting your objective*
- *Reviewing ram team*

- *Selecting better rams (tools available)*
- *Enhancing gene flow through your flock*