

New Breeding Objectives

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BRIDGING SCIENCE & BUSINESS

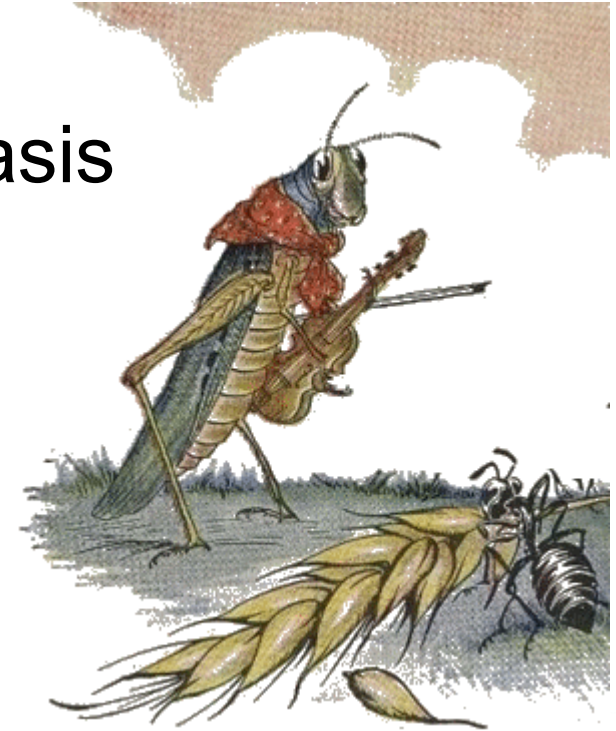
Background

- Indexes determine the priority given to alternative traits
- Breeding objectives = a set of economic weights
- High economic weight not necessarily high emphasis
 - Also need genetic variation and accurate BV
- The sheep of the future!
- What are the markets telling us?
- What fundamental shifts are happening?



Background

- Indexes determine the priority given to alternative traits
- Breeding objectives = a set of economic weights
- High economic weight not necessarily high emphasis
 - Also need genetic variation and accurate BV
- The sheep of the future!
- What are the markets telling us?
- What fundamental shifts are happening?



Information sources

- B+L NZ Economic Service
- NZX AgriHQ
- B+LNZ (2016) Compendium of NZ farm facts
- Stats NZ - InfoShare
- Published papers (e.g. Muir 2009, Everett Hincks 2014)
- Books (Nicol and Brookes 2010, Lincoln Farm Financial Manual)
- Meat company payment systems
- SIL genetic trends
- ...



Prices and premiums +~30%

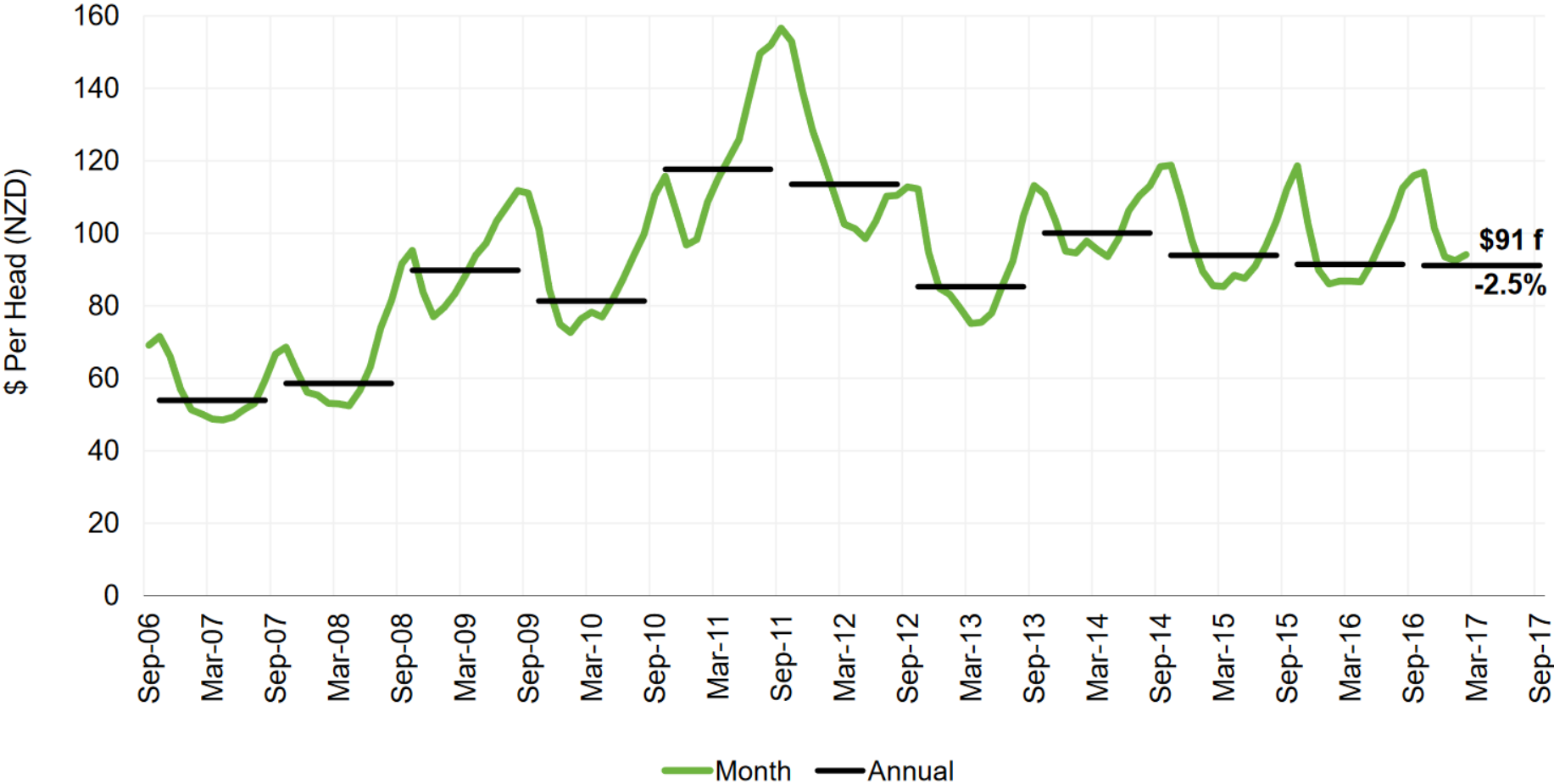


Definition	Value 2010 (\$)	Value 2016 (\$)
Lamb price for a 17.52kg lamb including pelt (unadjusted for transport costs) (\$/ head)	77.10	100.73
Premium per lamb obtained when carcass weight increased by 1kg (\$)	4.40	5.75
Premium paid per ewe (not graded as a cutter) when carcass weight increased by 1kg	2.10	2.75
Premium per store lamb obtained when live weight increased by 1kg	2.65	3.03
Premium for wool when fleece weight increased 1kg (clean basis)	4.25	5.75

Lamb Price (NZ) All Grades

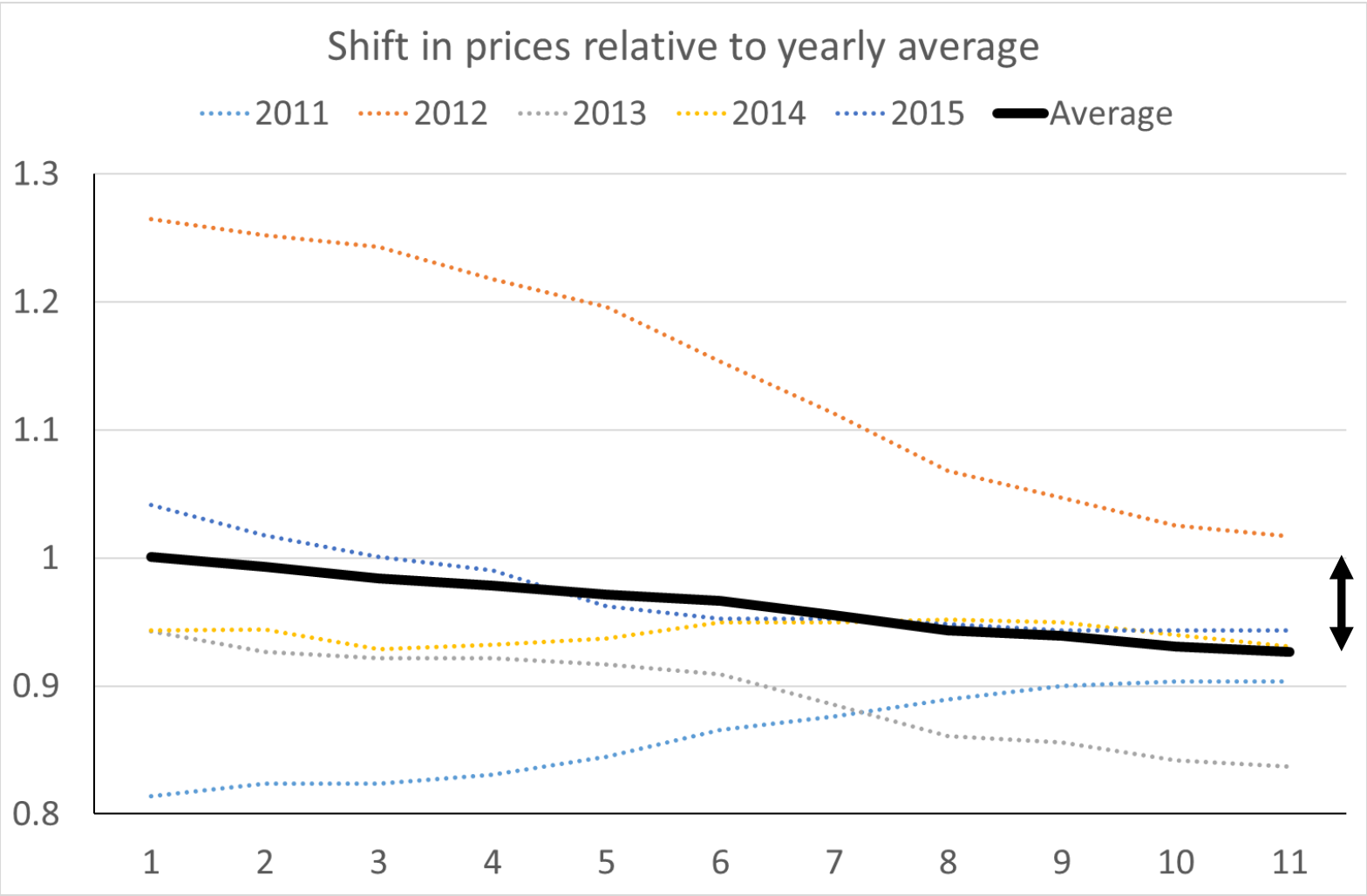


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Source: Beef + Lamb New Zealand Economic Service

Seasonal price drift



7% drop over 10 weeks

Week from early January to Mid March

Seasonal price drift



Definition	Value 2010 (\$)	Value 2016 (\$)
Mid-season drift in lamb price (start of January until start of March) (\$/head/day)	0.05	0.06
Early-season drift in lamb price (start of November until end of December) (\$/head/day)	0.23	0.22
Early-season drift in ewe price (start of November until end of December) (\$/head/day)	0.05	0.09

- Faster mid-season drift
- Slower early season drift
- Faster ewe drift

Slaughter profile



Definition	Value 2010	Value 2016
Proportion of lambs slaughtered early-season	0.18	0.25
Proportion of lambs slaughtered mid-season	0.57	0.50
Proportion of lambs slaughtered late-season (heavier)	0.25	0.25
Proportion of lambs destined for slaughter mid-season sold store	0.255	0.143
Proportion of lambs destined for slaughter late-season sold store	0.140	0.200

- More lambs in the early season (based on data from 2010-2015 incl.)

Feed costs (\$/ MJME)



Definition	Value 2010	Value 2016
Spring feed cost all stock	0.001	0.004
Summer/ autumn feed cost for lambs	0.018	0.024
Summer/ autumn feed cost for ewes	0.013	0.017
Winter feed cost	0.035	0.040

- More opportunities to generate value from spring feed
- Increase in costs in line with greater opportunity to use this feed for profit in other enterprises



Objective trait	2010	2016	% change
Ewe mature weight (kg)	-119*	-147*	23.3%
Carcase weight (kg)	374	467	25.0%
Weaning weight direct (kg)	136	122	-10.0%
Weaning weight maternal (kg)	121	140	16.0%

Weaning weight less important

- Less lambs sold store
- Shifting feed demand to earlier in the season is less valuable as less issues with spring surplus

Still a strong emphasis on growth rate (Carcase Weight +25%)!



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Carcase weight (kg)	374	467	25.0%
Weaning weight direct (kg)	136	122	-10.0%
Weaning weight maternal (kg)	121	140	16.0%
Number of lambs born (ewe)	2231	2954	32.4%
Lamb survival (direct)	9246	12274	32.8%
Lamb survival (maternal)	8378	11136	32.9%
Lamb fleece weight (kg)	261	341	30.7%
Fleece weight at 12 months (kg)	113	153	35.3%
Adult fleece weight (kg)	327	443	35.3%
Hogget pregnancy	1037	1390	34.0%
Hogget number of lambs born	502	620	23.6%



Objective trait	2010	2016	% change
Shoulder lean yield (kg)	251	419	67.1%
Leg lean yield (kg)	501	555	10.7%
Loin lean yield (kg)	752	791	5.2%
Fat yield (kg)	0	0	0.0%

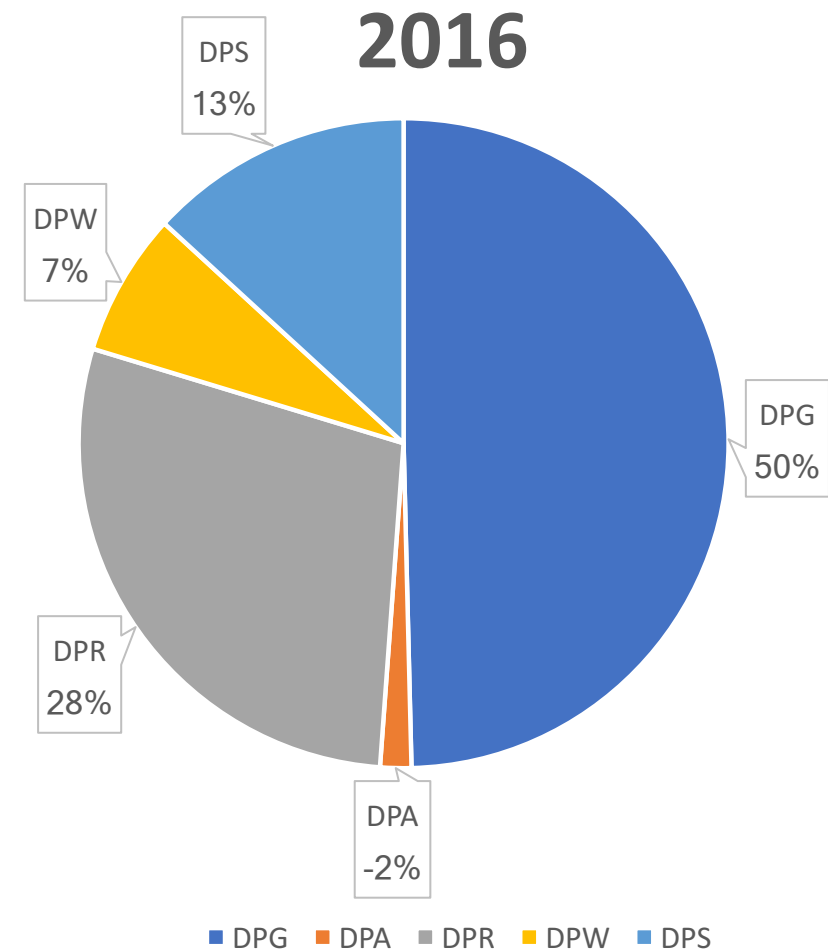
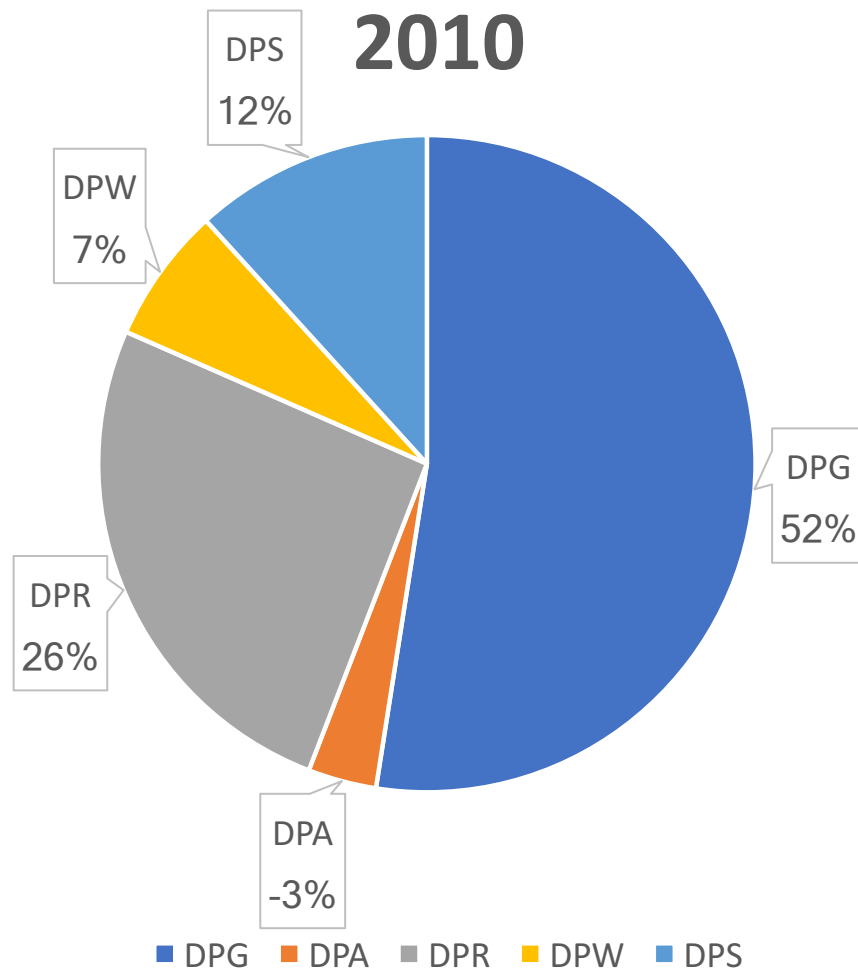


Changing markets for lamb meat

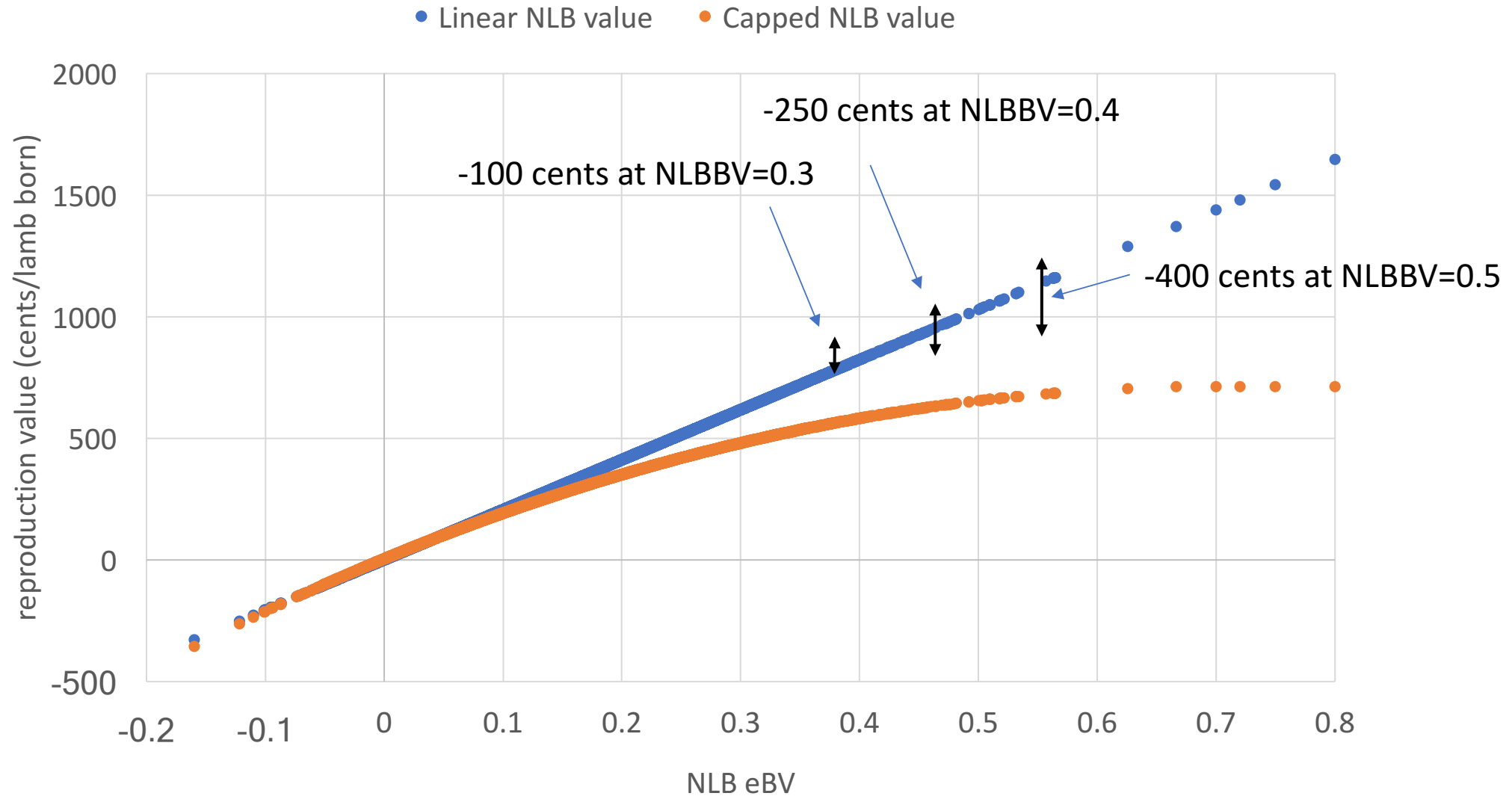


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Fat yield (kg)	0	0	0.0%
GGT21	-1433	-1947	35.9%
FEC1%	-4.14	-5.21	25.7%
FEC2%	-4.14	-5.21	25.7%
AFEC%	-3.12	-3.93	25.8%
Lamb dag score	-48	-59	21.9%
Ewe dag score	-51	-62	22.1%
BCS	1715	1941	13.2%
Twinning	4637	4571	-1.4%

Response to selection NZMW (young rams – no cap on NLB)



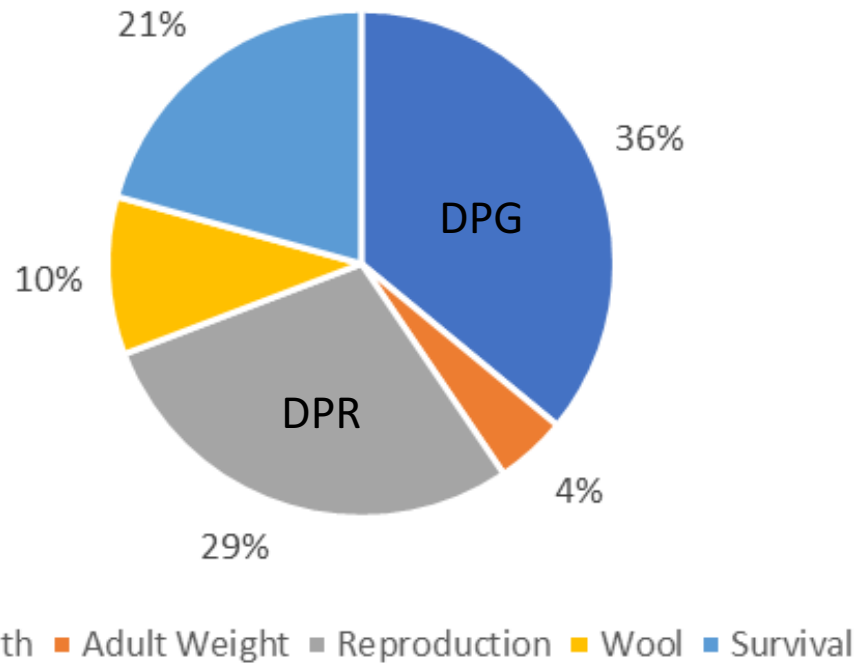
Capped NLB (DPCR)



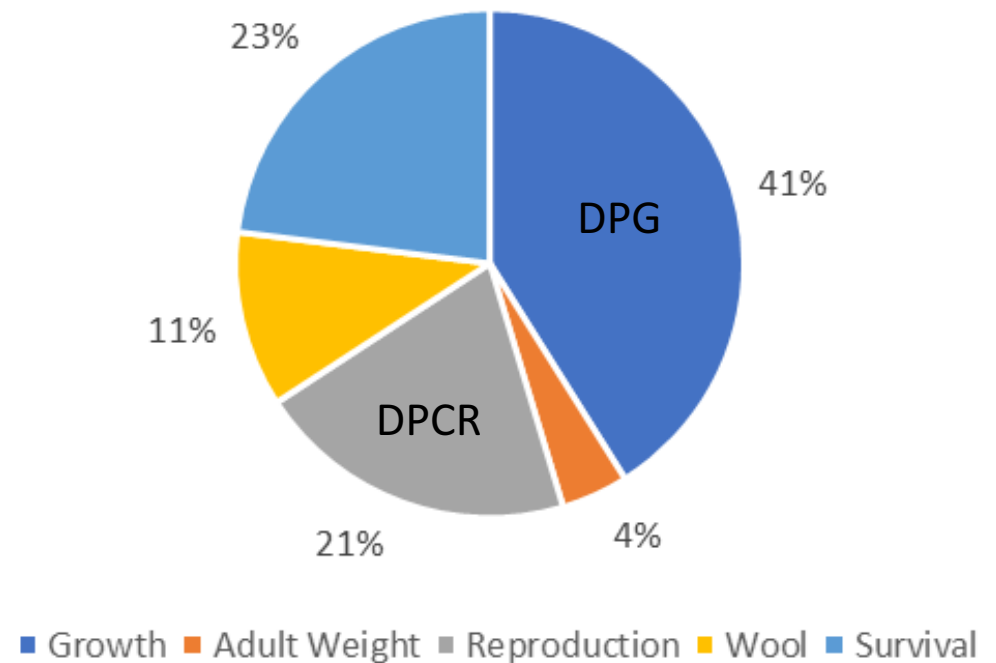
Response to selection NZMW (Effect of capped NLB)



NZMW 2016



NZMW 2016 capped NLB



Expected trend if select on NZMW (2016 economic values)



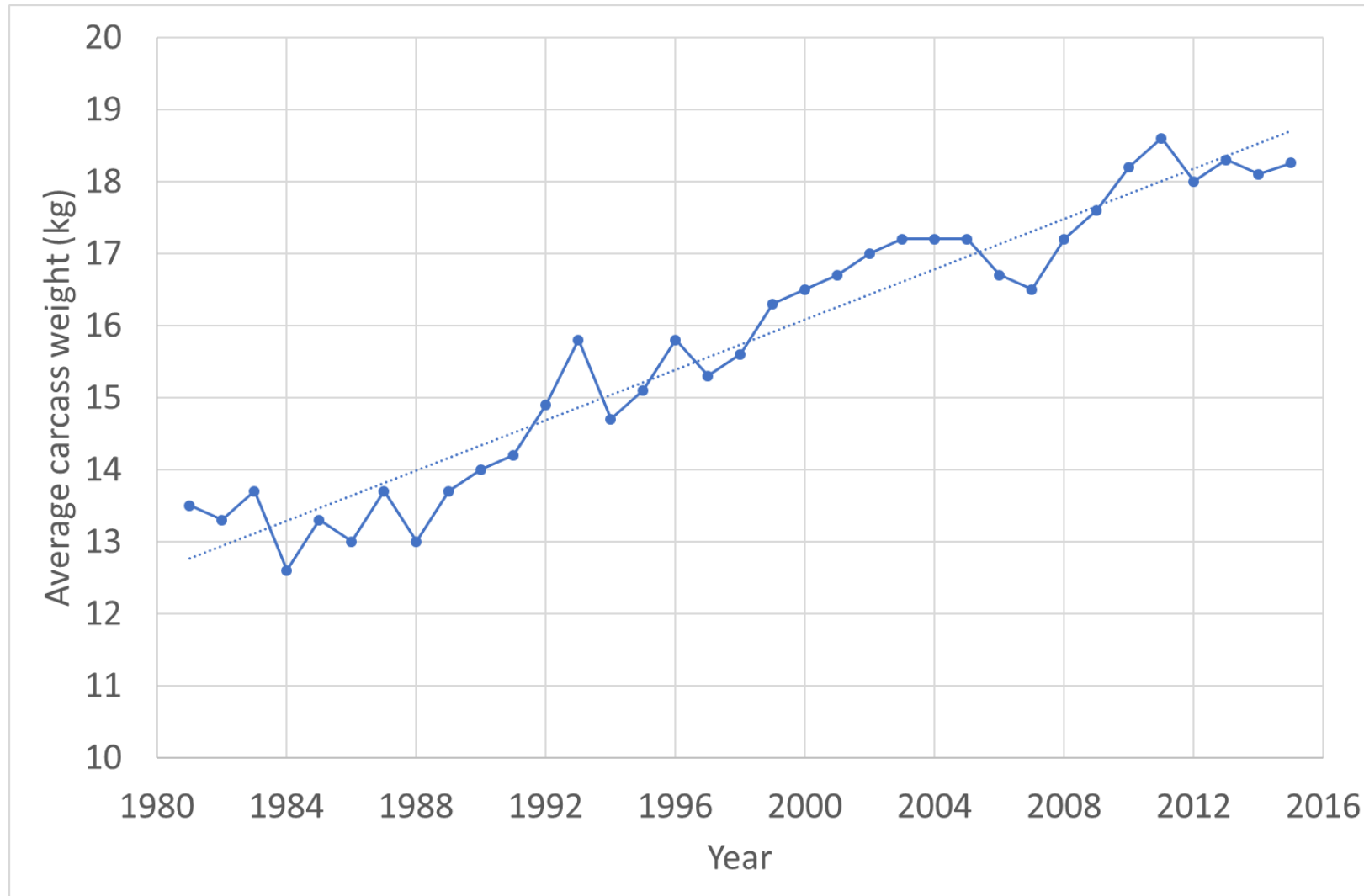
Trait	Young rams	Proven rams
NLBeBV (lambs born per ewe lambing)	0.0108	0.0127
EWTeBV (kg adult liveweight)	0.0110	-0.1052
CWeBV (kg carcase weight)	0.0558	0.0271
WWTeBV (kg live weight)	0.1079	0.0669
WWTMeBV (kg live weight from milk)	0.0532	0.0439
SUReBV (lambs weaned per lamb born)	0.0008	0.0007
SURMeBV (lambs weaned per lamb born)	0.0005	0.0004
LFWeBV (kg of greasy fleece weight)	0.0019	0.0015
FW12eBV (kg of greasy fleece weight)	0.0139	0.0109
EFWeBV (kg of greasy fleece weight)	0.0122	0.0097

For every 100 cents of index gain

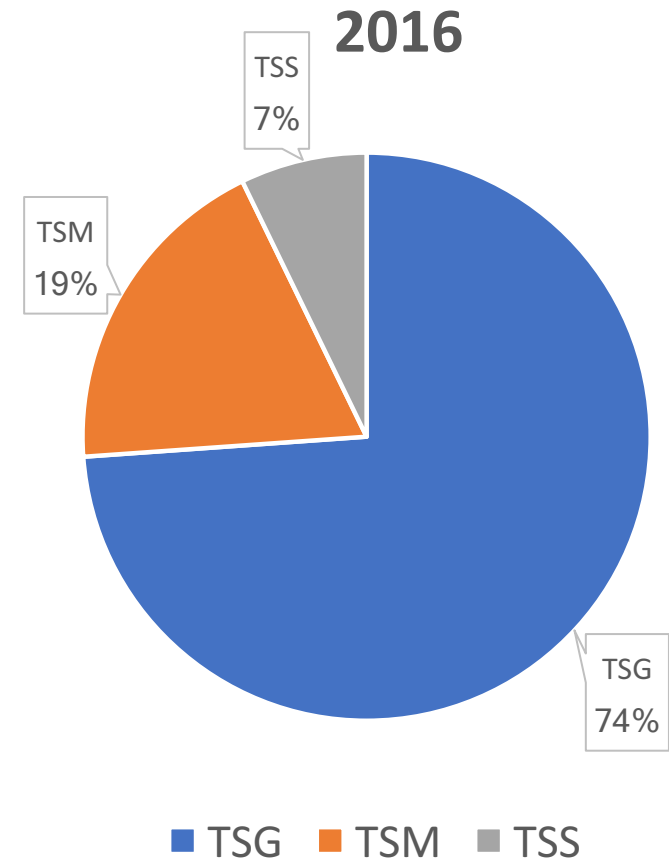
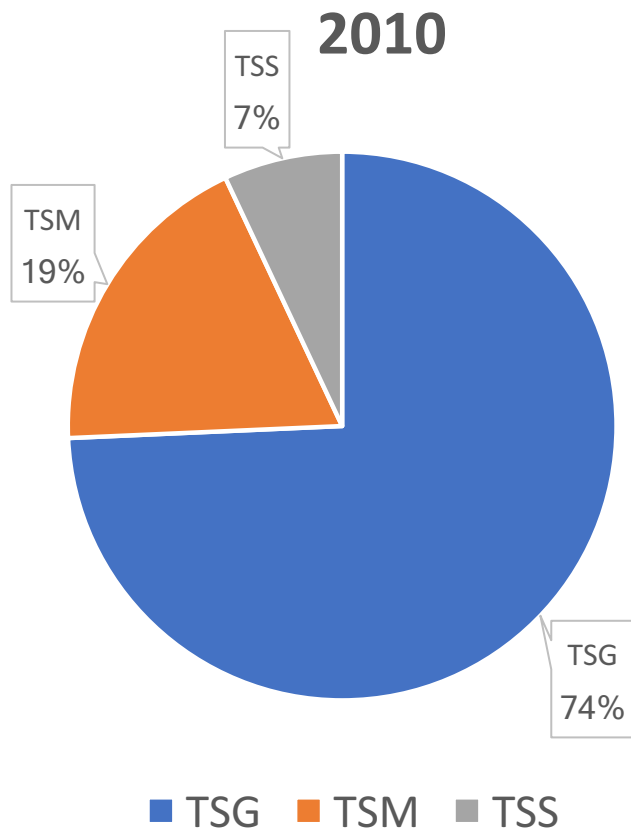


Objective trait	2010	2016	% change
Carcase weight (kg)	195	243	24.7%
Weaning weight direct (kg)	68	61	-10.7%
Lamb survival (direct)	4567	6066	32.8%
Shoulder lean yield (kg)	136	227	67.4%
Leg lean yield (kg)	271	301	10.8%
Loin lean yield (kg)	407	429	5.3%
Fat yield (kg)	-200	-237	18.5%

Long term trend in carcase weight



Response to selection (NZTW – young rams)



Expected trend if select on NZTW (2016 economic values)



Trait	Young rams	Proven rams
CWeBV (kg)	0.1088	0.0936
WWTeBV (kg)	0.1748	0.1644
SUReBV (lambs weaned / lamb born)	0.0007	0.0009
SHLYeBV (kg of shoulder lean per kg of carcass weight)	0.0089	0.0106
HQLYeBV (kg of hind quarter lean per kg of carcass weight)	0.0110	0.0109
LNLYeBV (kg of loin lean per kg of carcass weight)	0.0074	0.0093
FATYeBV (kg of fat per kg of carcass weight)	-0.0159	-0.0284

Proposed change in NZMW index scale



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- Currently index cents in \$ per ewe lambing
- New index weights are 25-30% higher
- Introduction of capped NLB reduces top indexes
- But what if we changed the indexes to “per lamb born”?
 - Consistent with NZTW
 - Value of a ram is $\text{NZMW} \times \frac{1}{2} \times \text{expected number of lifetime progeny}$

Effect of new options on how values look



Index	Effect on average	Effect on spread
Current NZMW	-	
New economic weights	+280 cents	+23 %
New economic weights – capped NLB	+193 cents	+15 %
New economic weights – new scale	-162 cents	0 %
New economic weights – new scale – capped NLB	-350 cents	-20 %

Key messages



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- The profit to be gained from genetic improvement is 20-30% higher (more variation in index values) than indicated by current indexes
- Only trivial re-ranking expected based on new economic information
- Capped NLB avoids over-rating excessively prolific animals
- Opportunity to change the scale of indexes to “per lamb born”
 - Clearer meaning
 - Indexes will drop on average and lower difference between top and bottom



Thank you.