



Changes to the Carcass Plus Index has decreased lamb carcass value.

Fiona Anderson

Murdoch University, Western Australia



Objectives

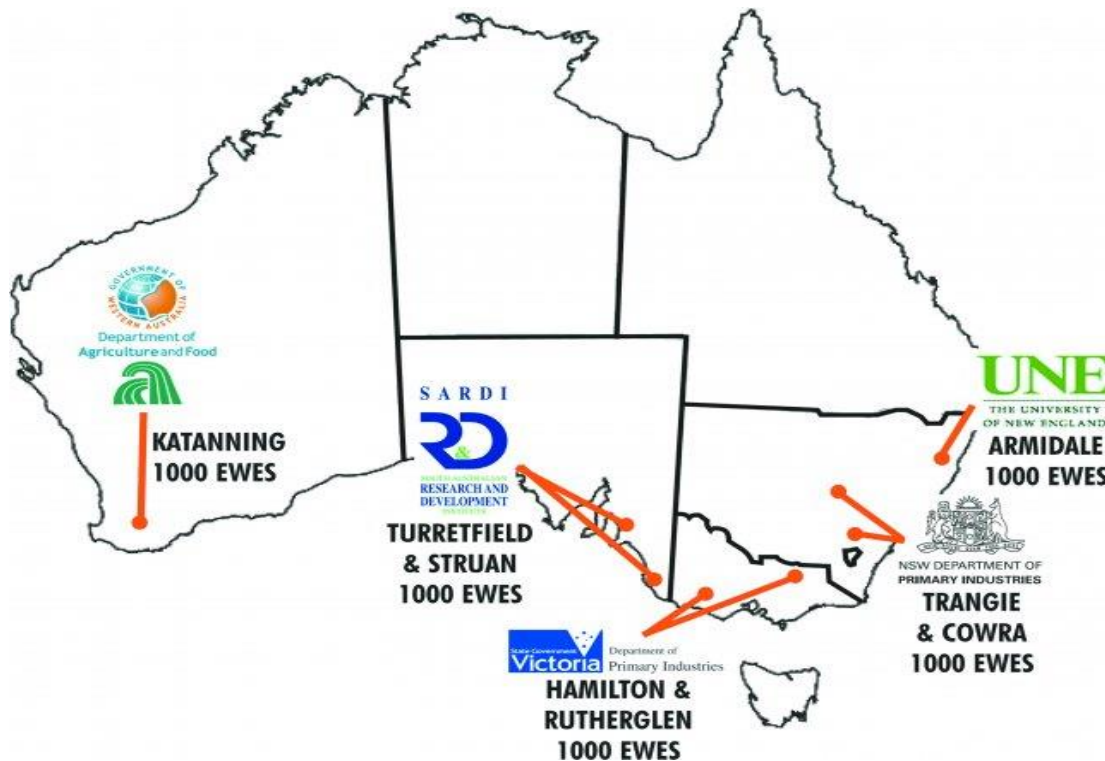
- Lean meat yield (LMY %).
- Carcass Plus Index and impact on LMY%
- Changes to the Carcass Plus Index are costing processors \$\$\$.



Sheep CRC Information Nucleus Flock

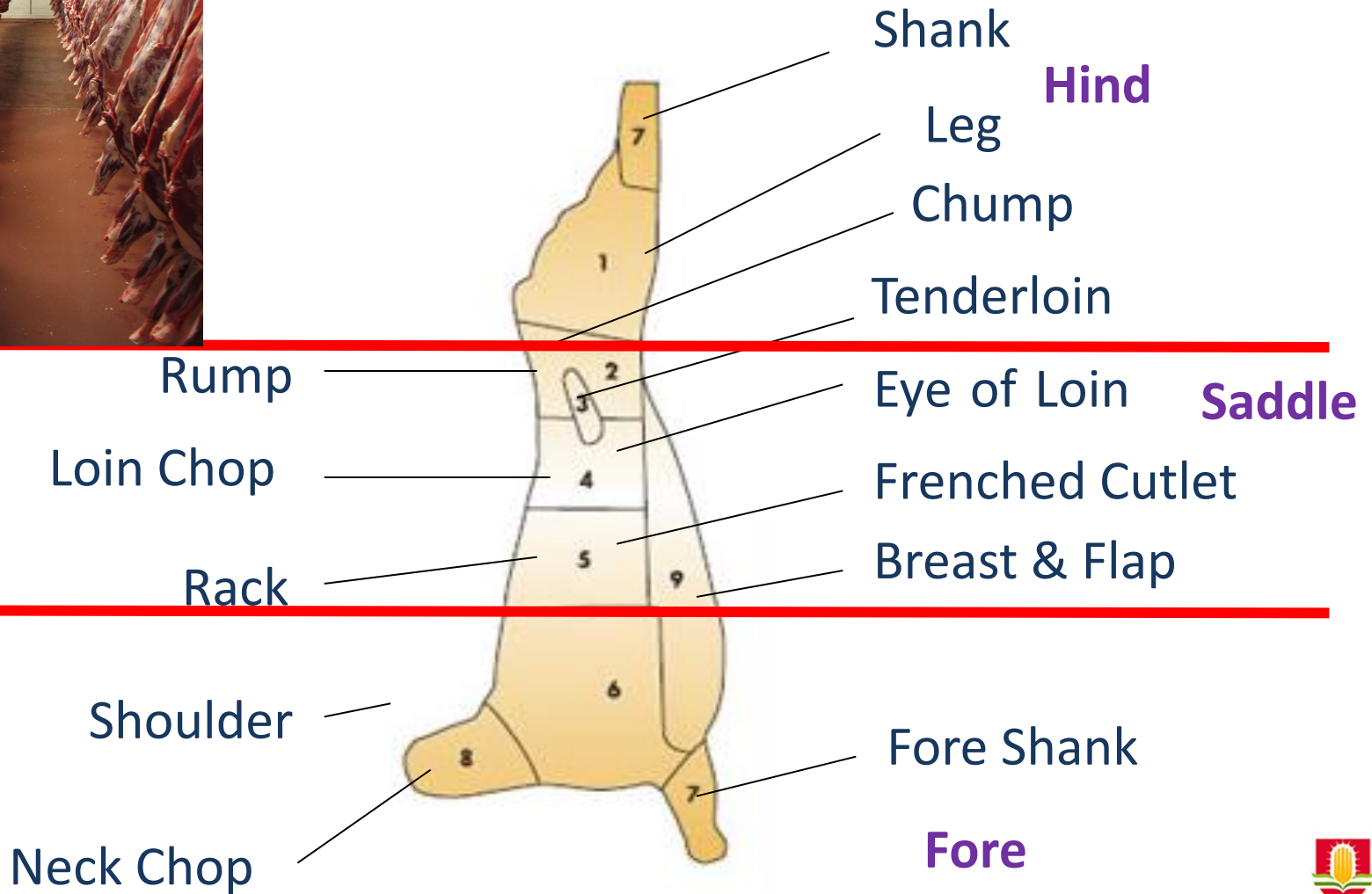
Acknowledgements

Graham Gardner
Andrew Williams
David Pethick
Liselotte Pannier
Andrew Blakely
Jason Siddell





Lean meat yield %

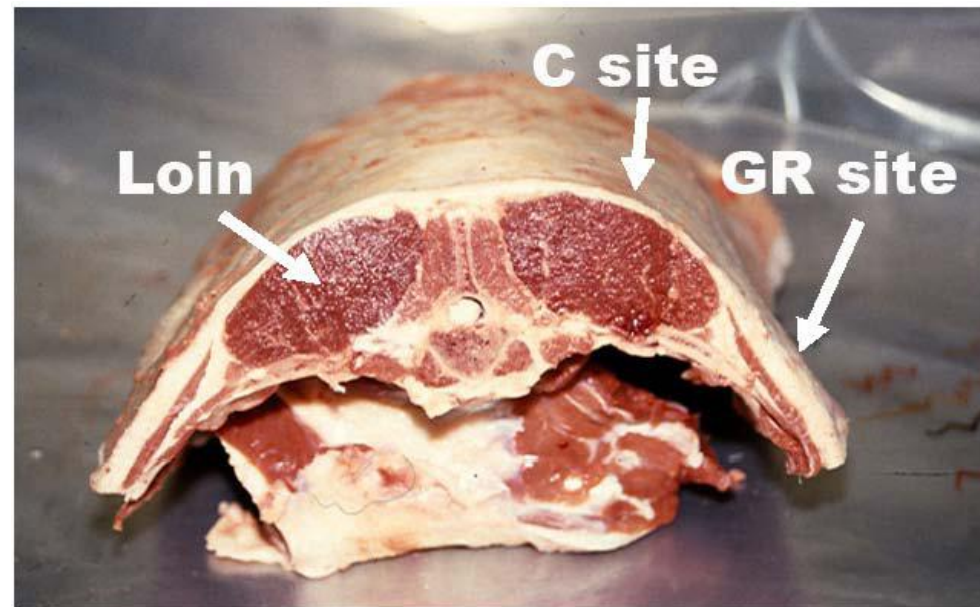


Australian Sheep Breeding Values

- Growth
- Leanness
- Muscling

Industry Indices

- Carcass plus

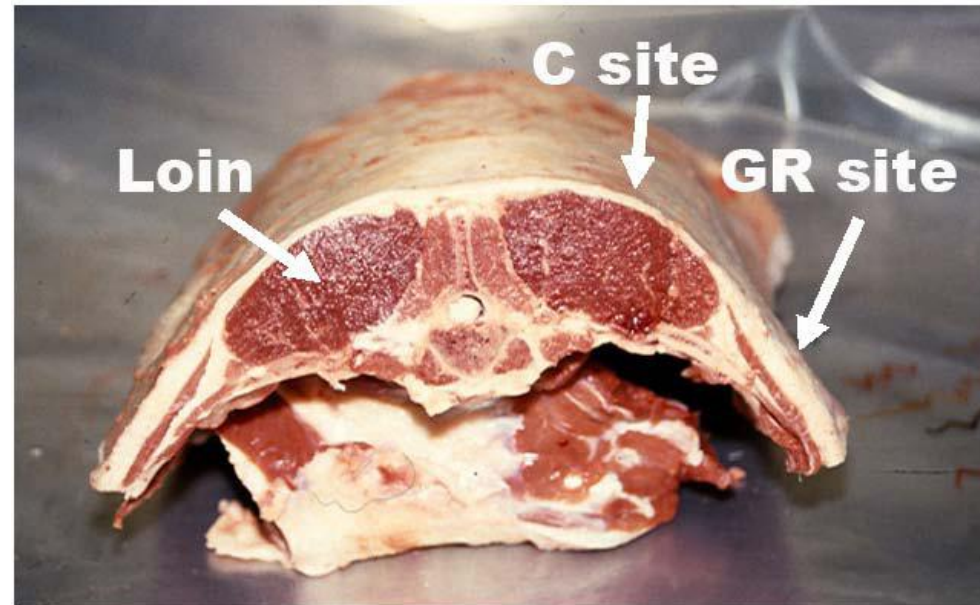


Australian Sheep Breeding Values

- Growth
- Leanness
- Muscling

Industry Indices

- Carcass plus



Carcass Plus



	OLD	NEW
Growth	60	
Growth (pre weaning)		
Muscle	20	
Leanness	20	

Carcass Plus



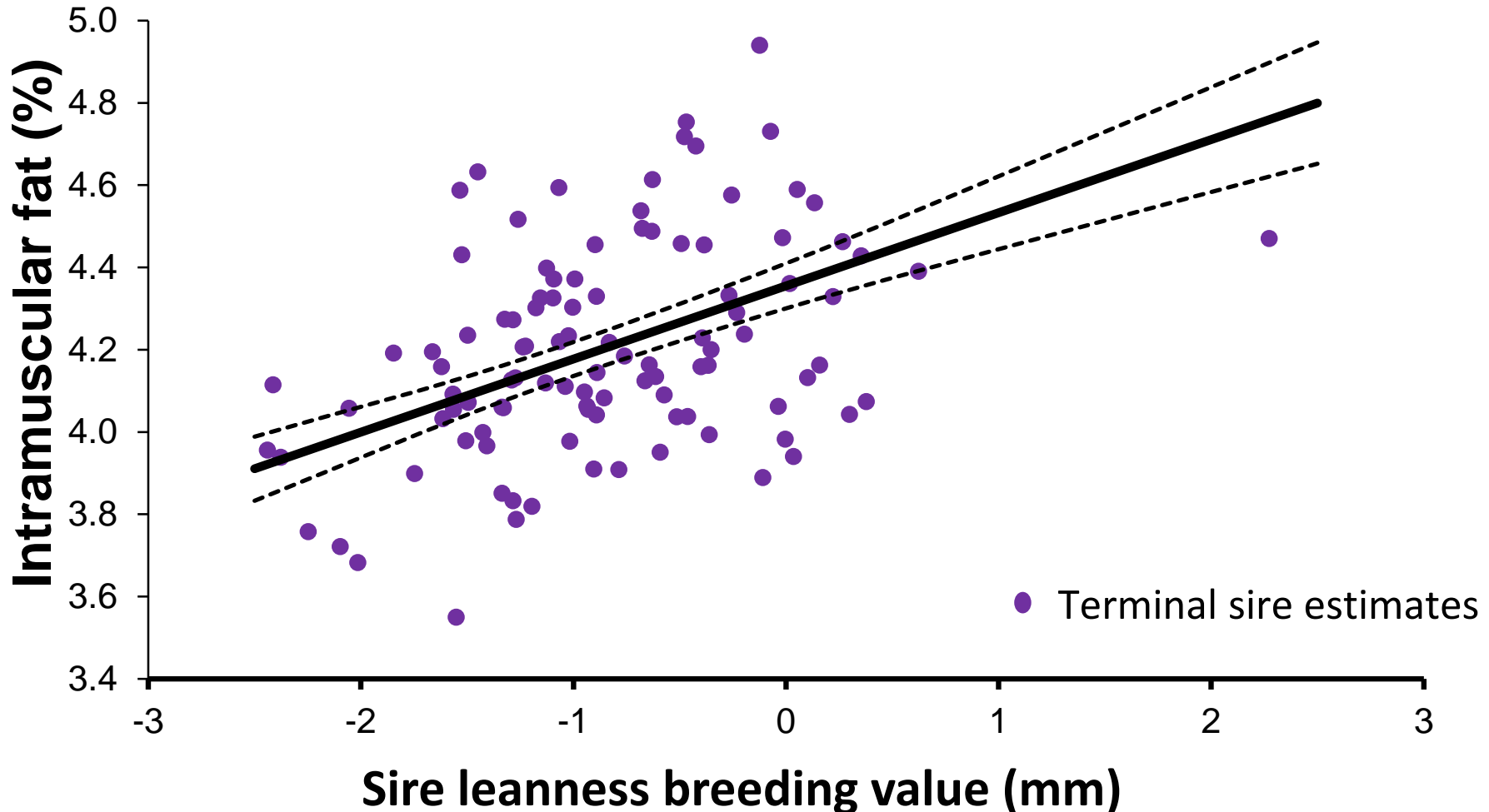
	OLD	NEW
Growth	60	35
Growth (pre weaning)		30
Muscle	20	30
Leanness	20	5

Carcass Plus



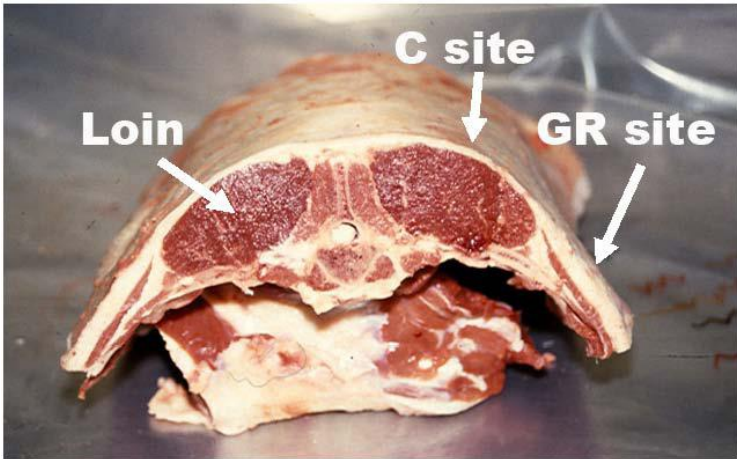
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Leanness breeding value



Pannier, L., et al. "Intramuscular fat in the *longissimus* muscle is reduced in lambs from sires selected for leanness." *Meat Science* (2013).

P < 0.01



Fatness ASBV

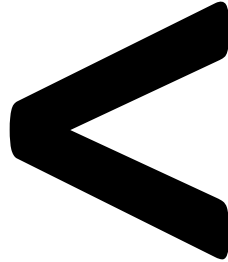
- Selection for leanness

•  carcass fat (Gardner 2010)

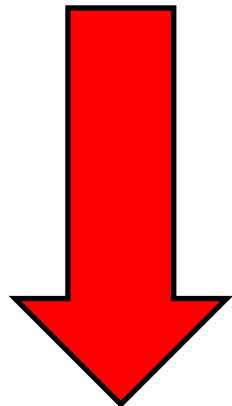
•  LMY% (Gardner 2010, Anderson unpub. 2013)

Hypothesis Carcass Plus

**NEW
Carcass
Plus**



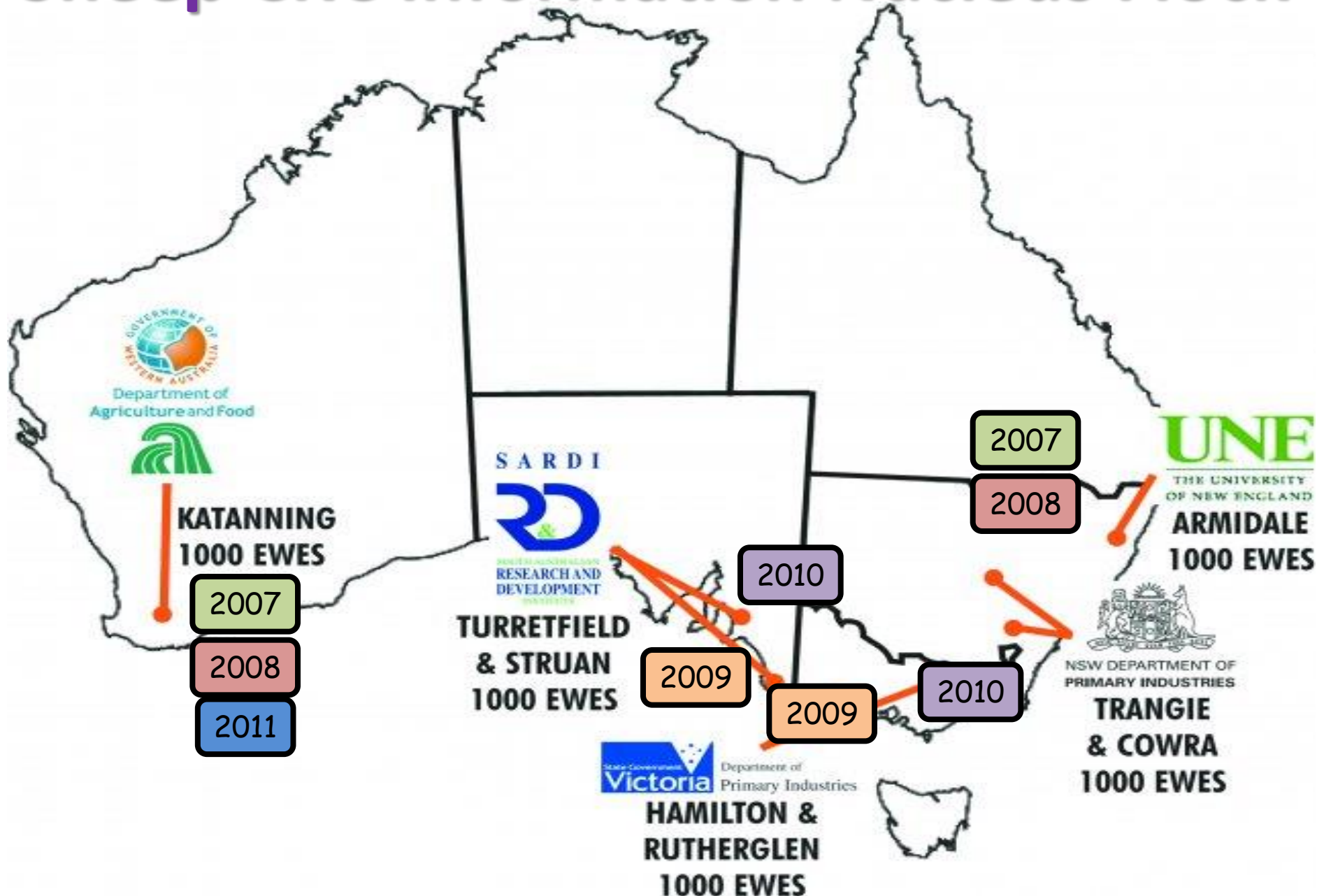
**OLD
Carcass
Plus**



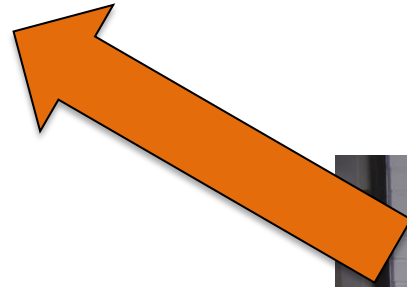
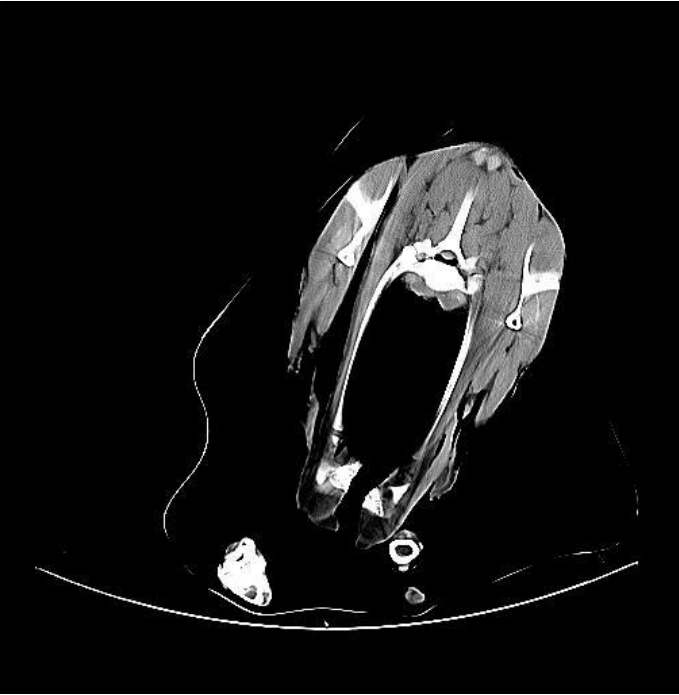
Method



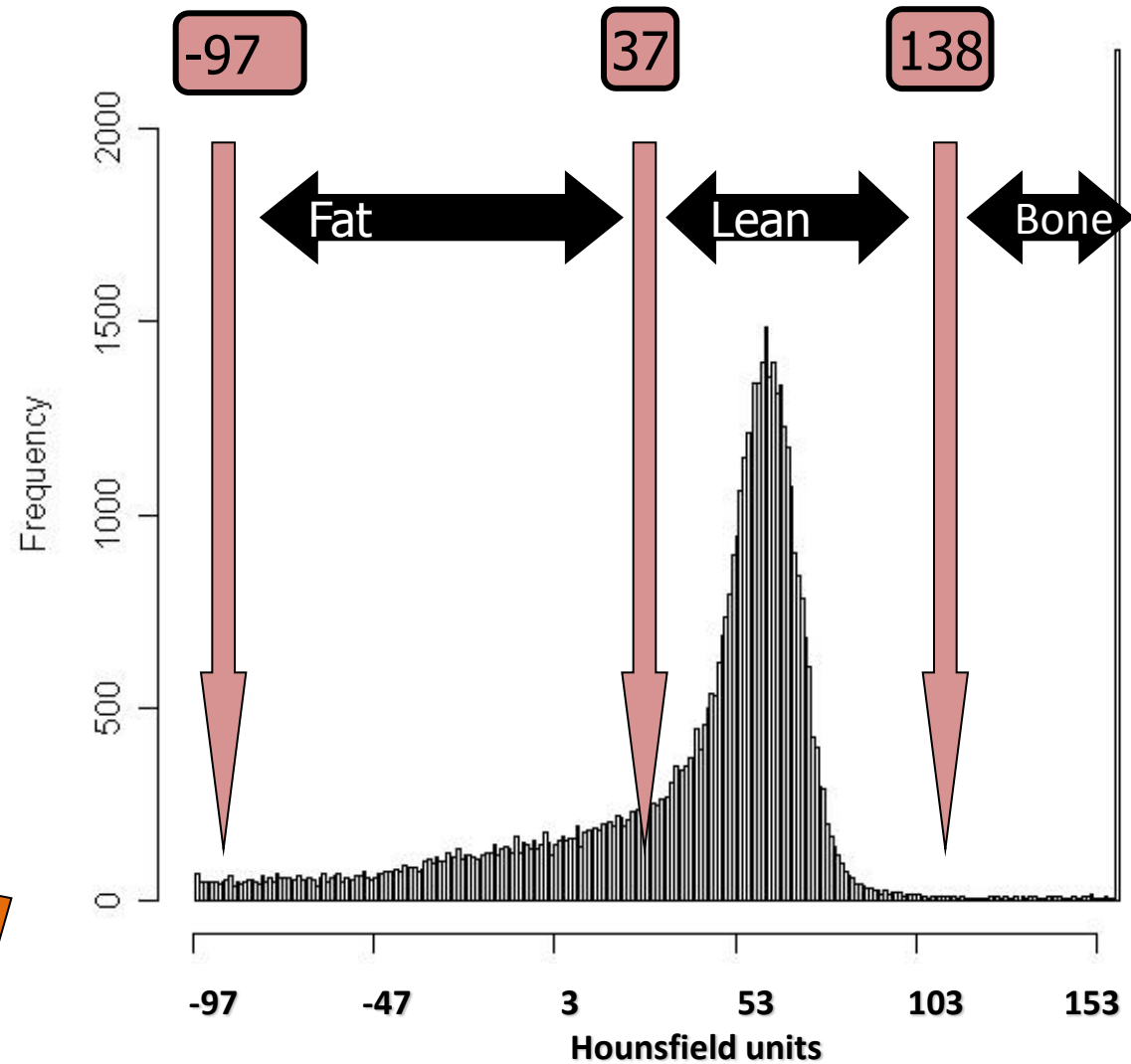
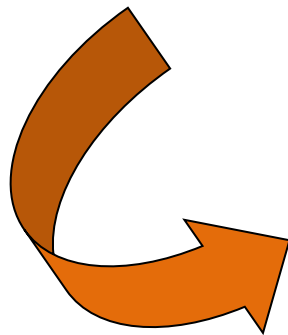
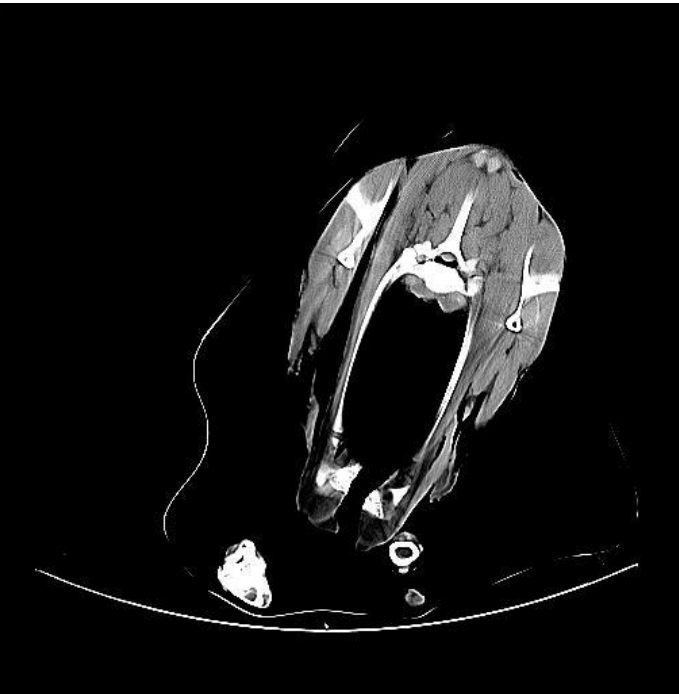
Sheep CRC Information Nucleus Flock



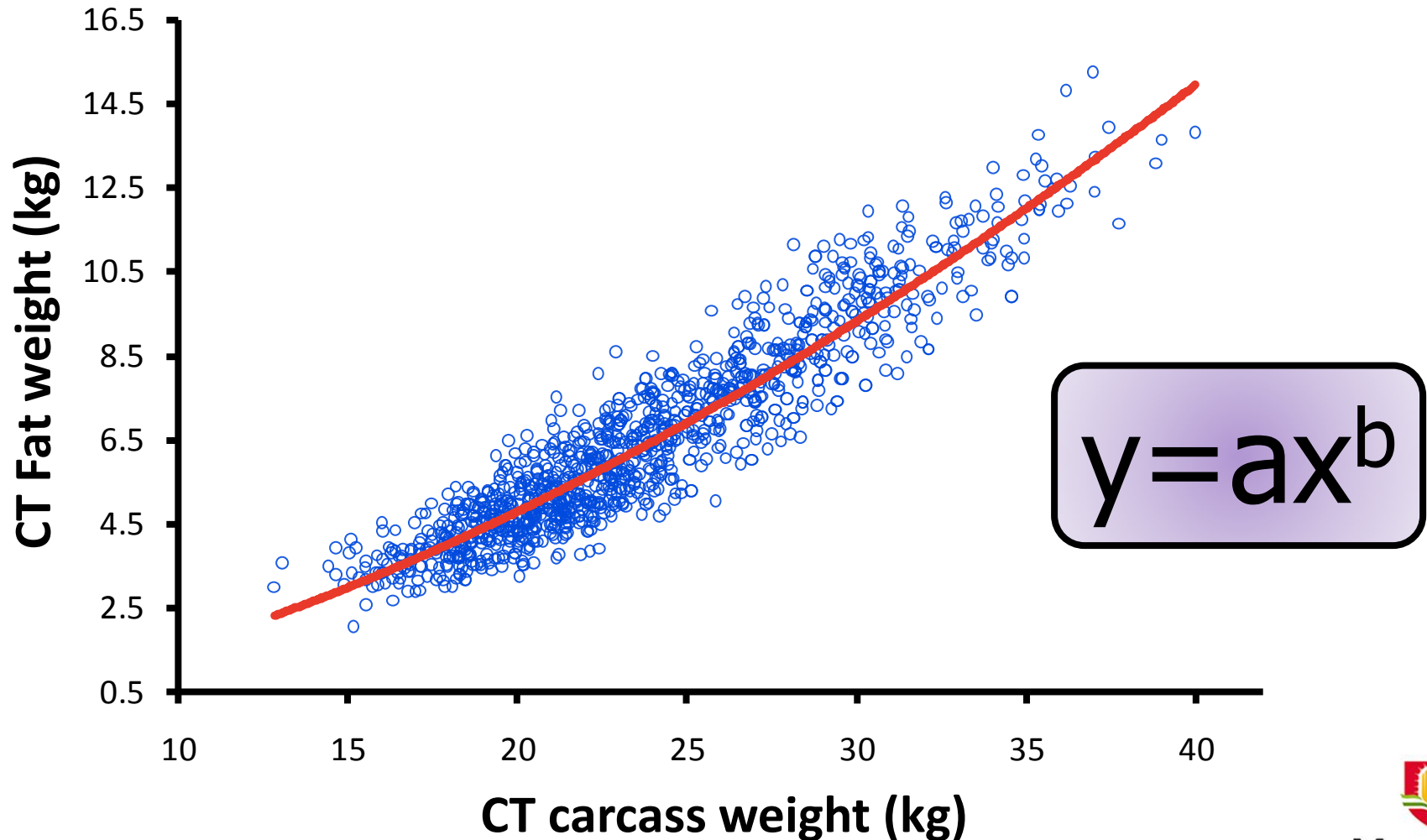
CT scanning



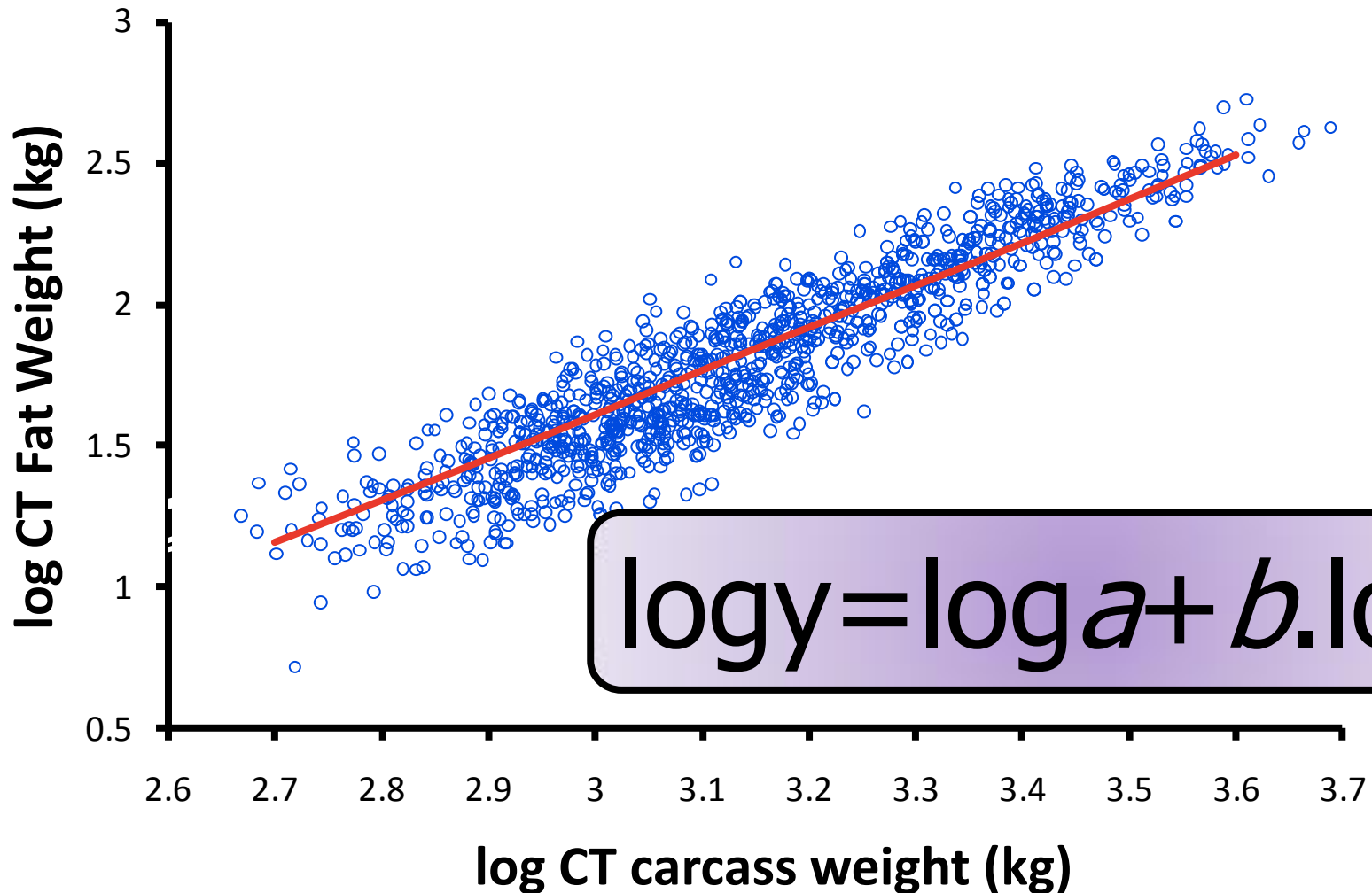
Converting image to tissue type



Carcass composition: raw data



Carcass composition: log data



Allometric Phenotypic Model

$$\log y = \log a + b \cdot \log x$$

Fixed effects

Dambreed
(sire type)

Sex(sire type)

Flock-year

Sire type

BTRT

Killgroup
(flock-year)

Covariates

- log CT carcass wt
- Sire Carcass Plus (new or old)

Random

Sire

Dam*Drop

log CT section
lean wt

Allometric Phenotypic Model

$$\log y = \log a + b \cdot \log x$$

Fixed effects

Dambreed
(sire type)

Sex(sire type)

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Killgroup
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Covariates

- log CT carcass wt
- Sire Carcass Plus (new or old)

Random

Sire
Dam*Drop

log CT section
lean wt

Interpret differences as
percentages

Lean

Lean yield by section



$\log \text{Hind Lean} = \log a + b \cdot \log \text{carcass weight}$



$\log \text{Saddle Lean} = \log a + b \cdot \log \text{carcass weight}$



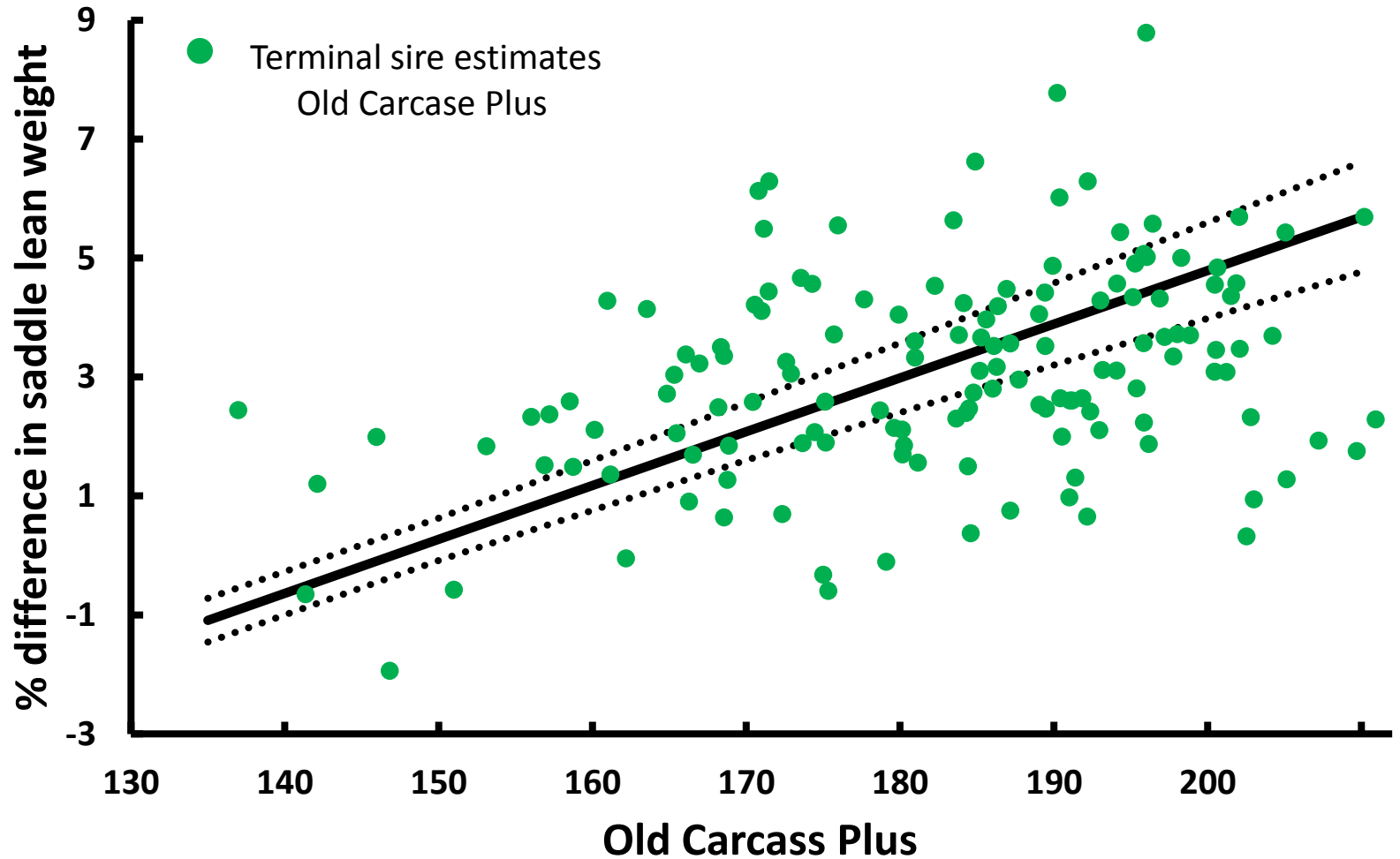
$\log \text{Fore Lean} = \log a + b \cdot \log \text{carcass weight}$



Results



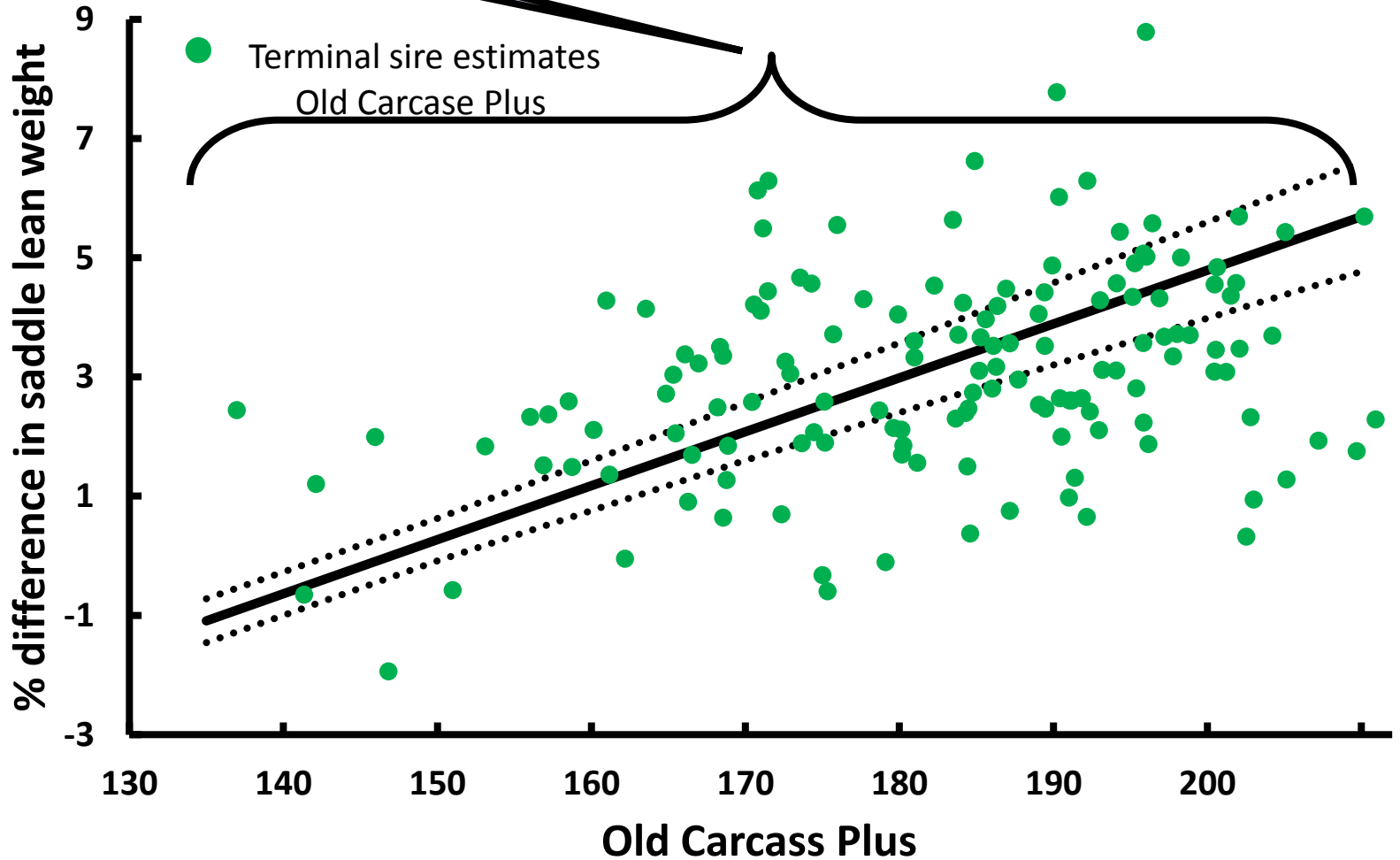
Effect of Old Carcass Plus on Saddle Lean Weight



P < 0.01

Effect of Old Carcass Plus on Saddle Lean Weight

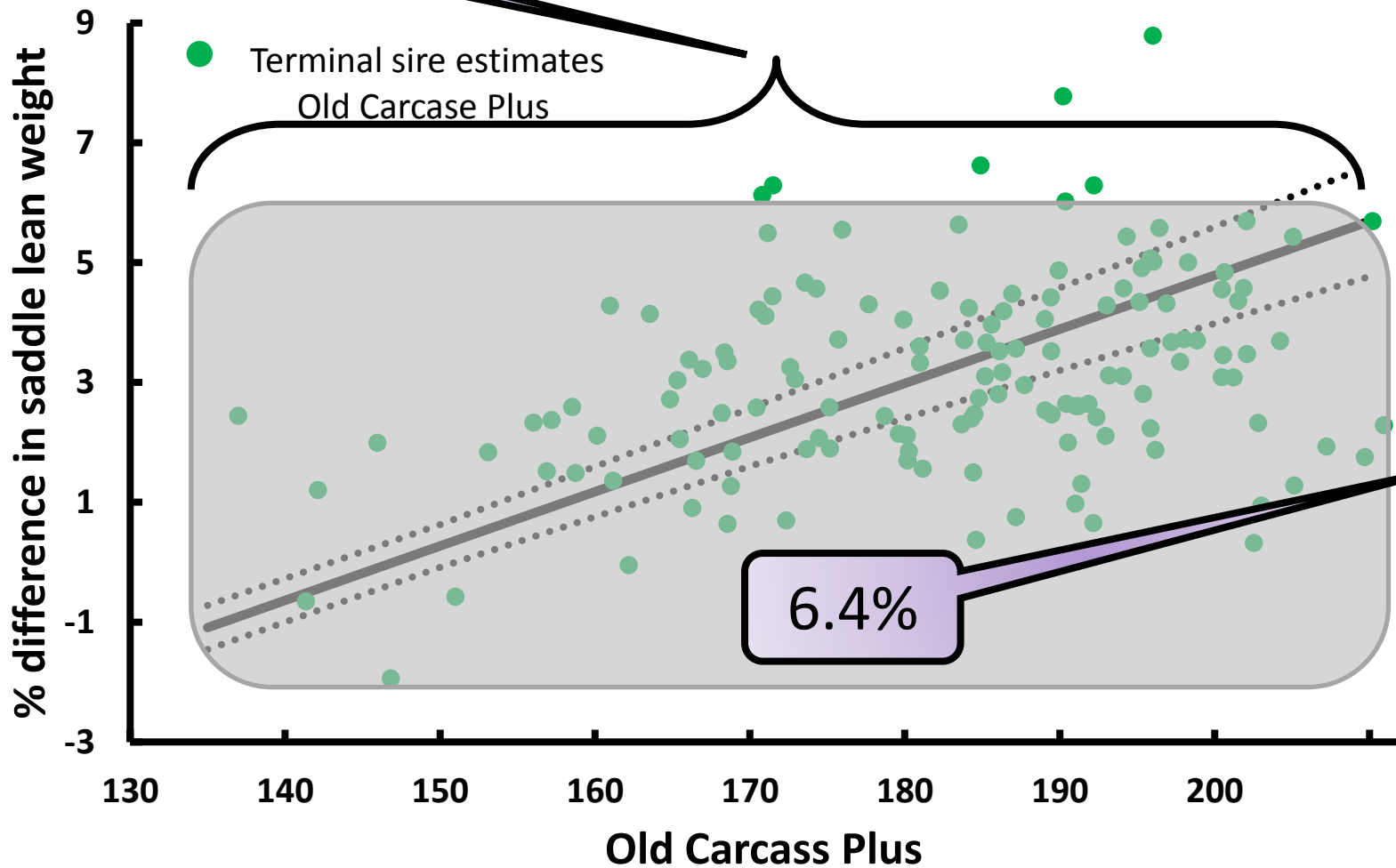
76 units



P < 0.01

Effect of Old Carcass Plus on Saddle Lean Weight

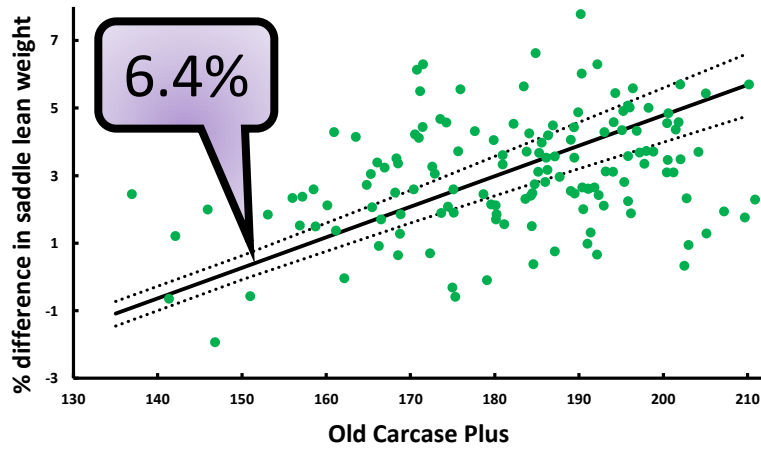
76 units



P < 0.01

Old Carcass Plus

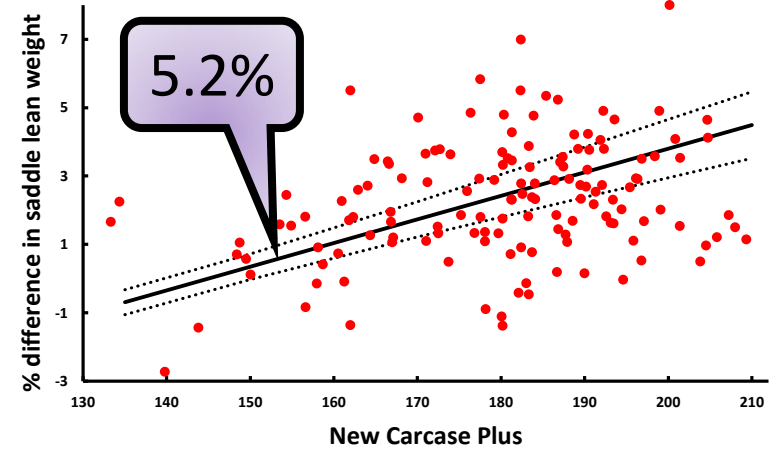
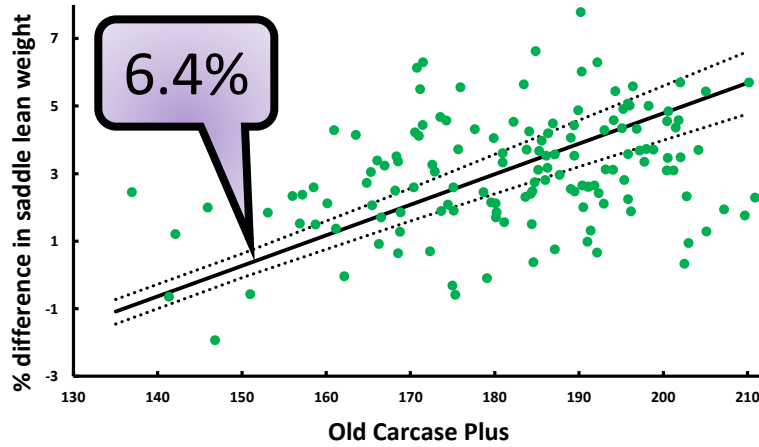
New Carcass Plus



P < 0.01

Old Carcass Plus

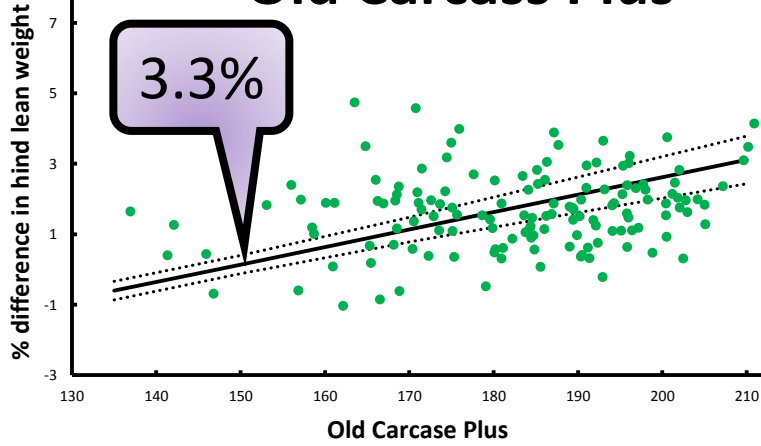
New Carcass Plus



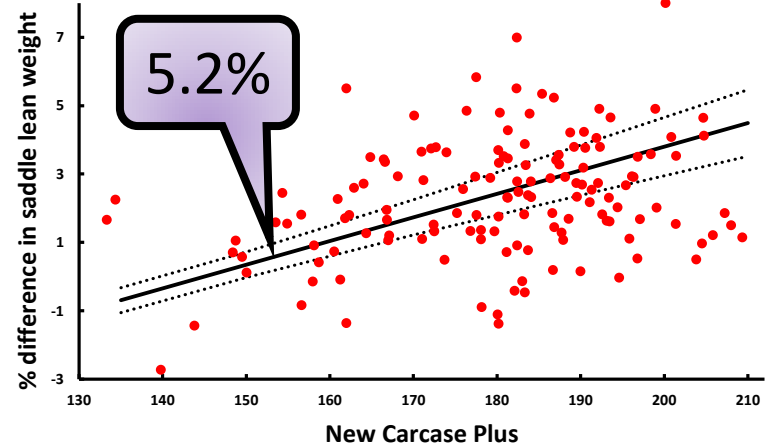
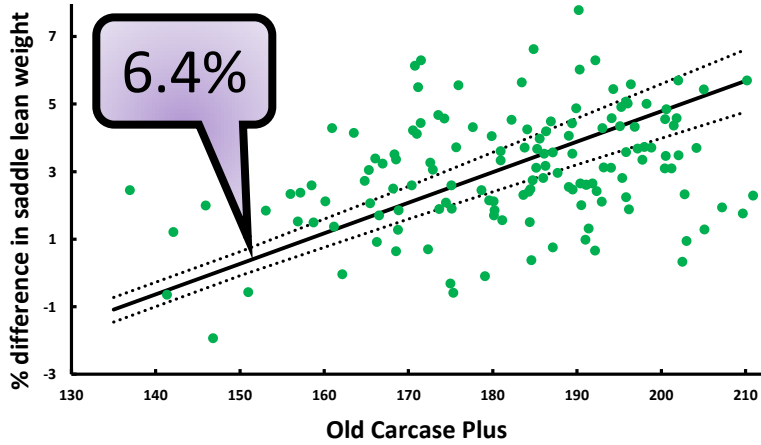
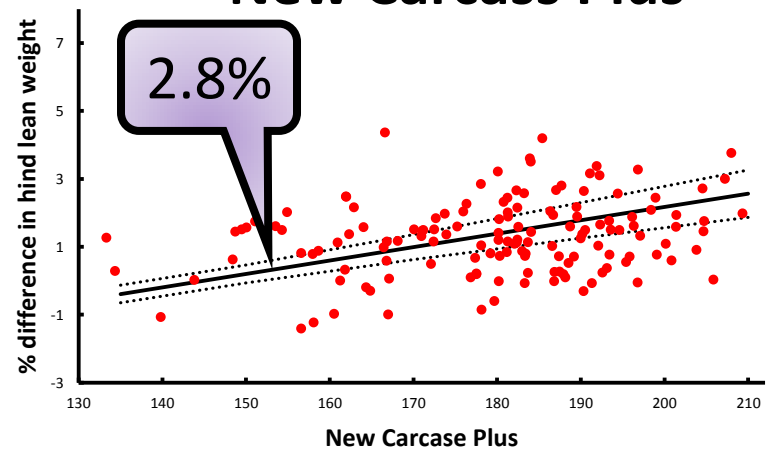
$P < 0.01$



Old Carcass Plus

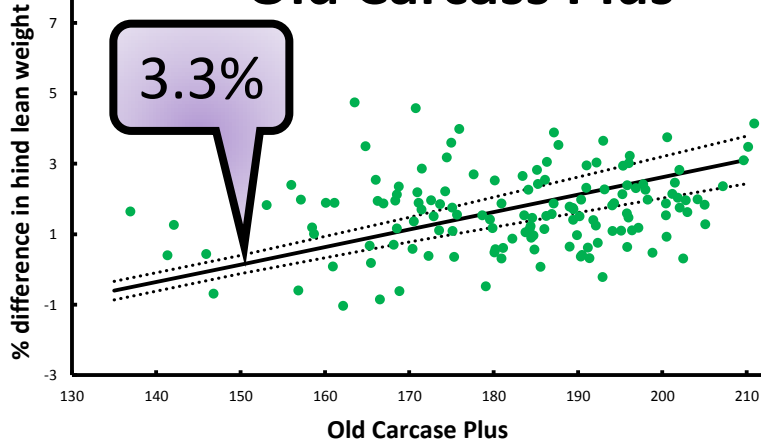


New Carcass Plus

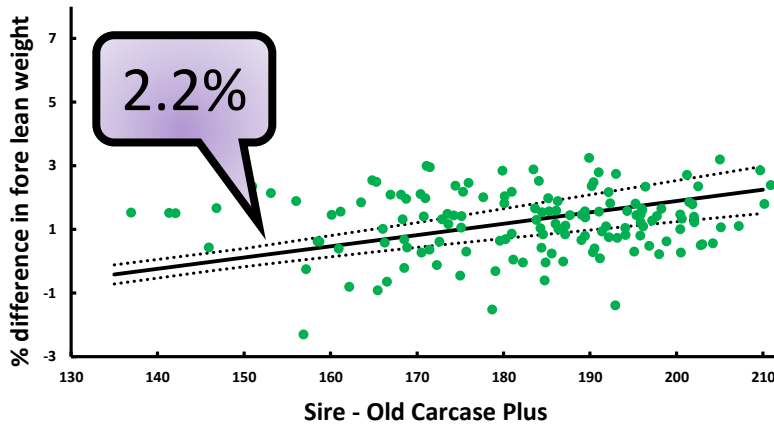
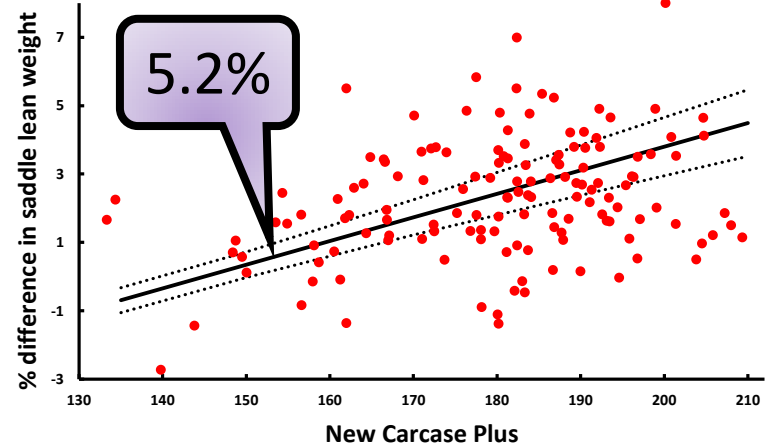
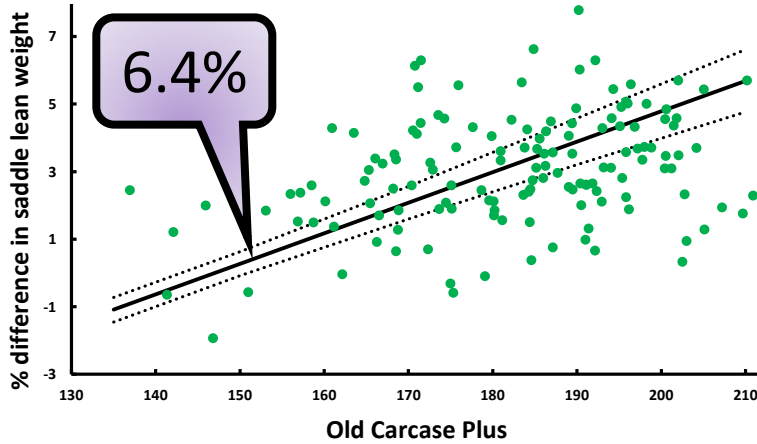
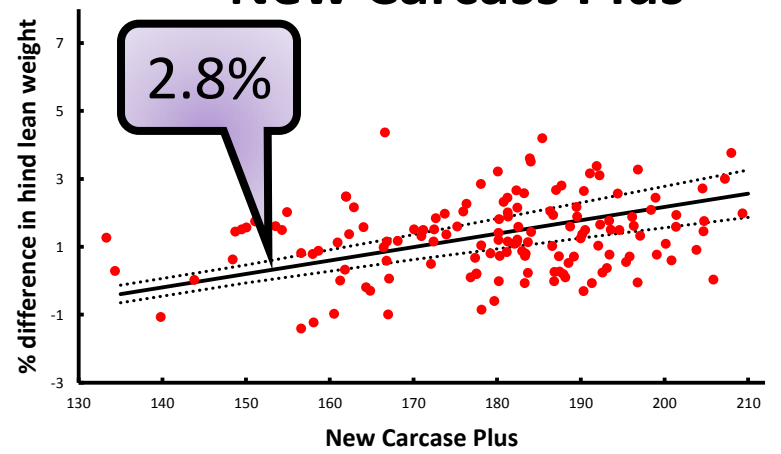




Old Carcass Plus



New Carcass Plus



No effect

$P < 0.01$

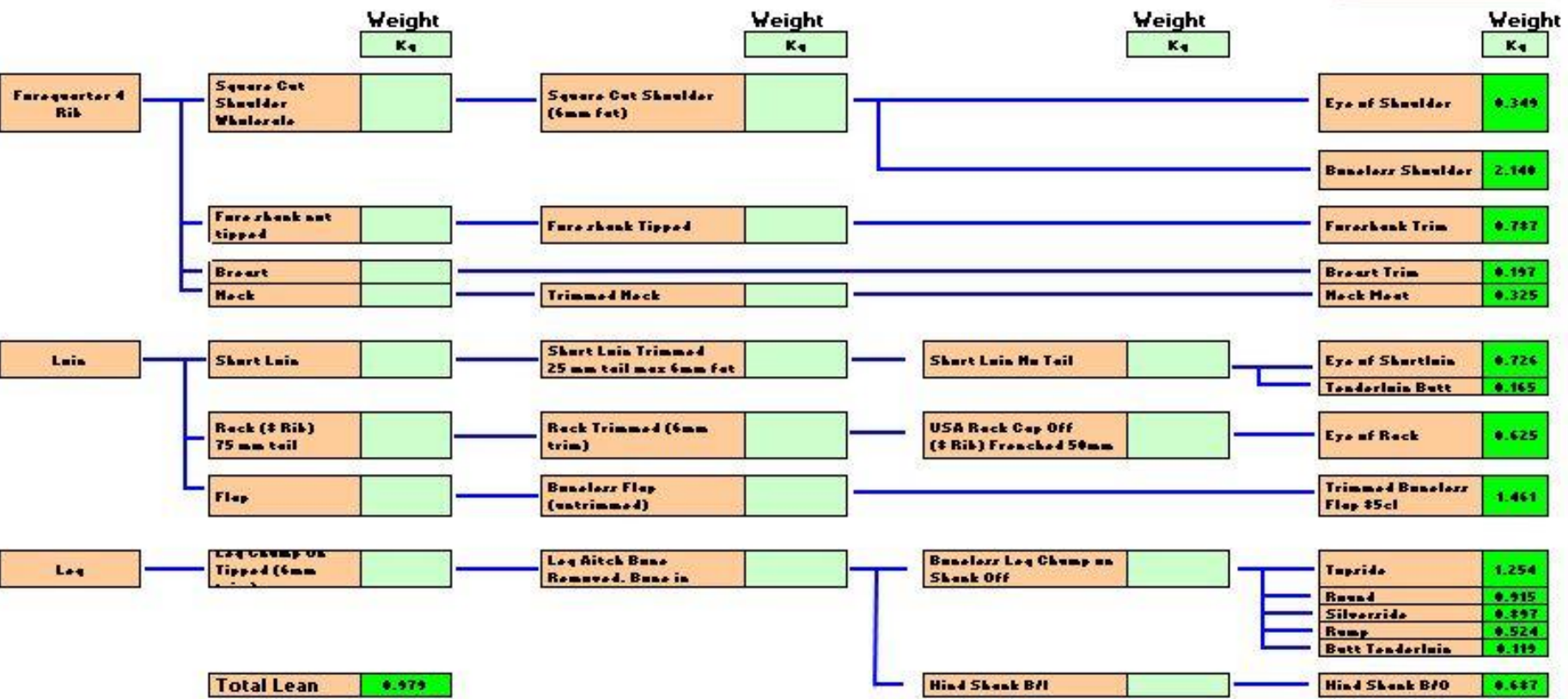
Primal Weight Estimates

Trade: Over the Hooks. X-Breed Av. GR: 14.1mm Av. HCW: 23 kg Shrinkage: 2.5 %

Total Retail Value **\$221.54**

Carcase Gross Prof **\$35.55 16.0%**

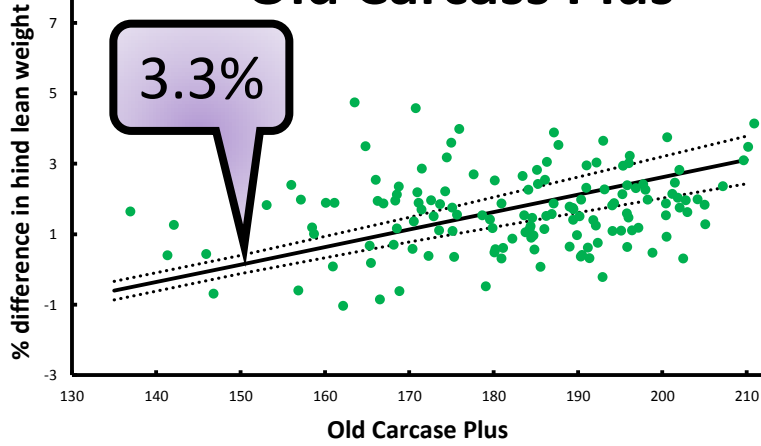
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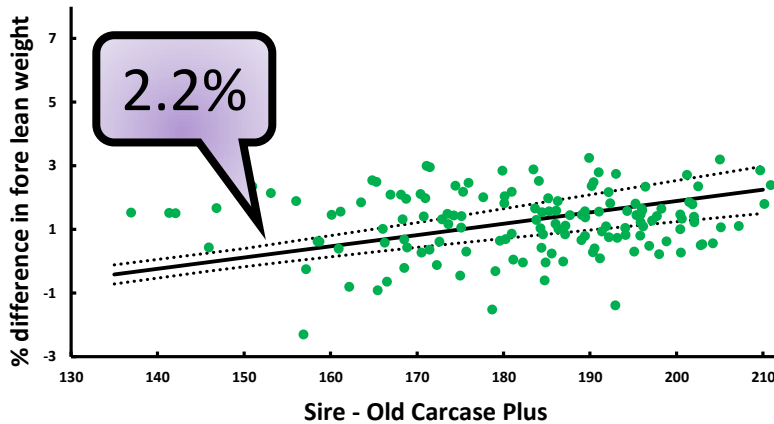
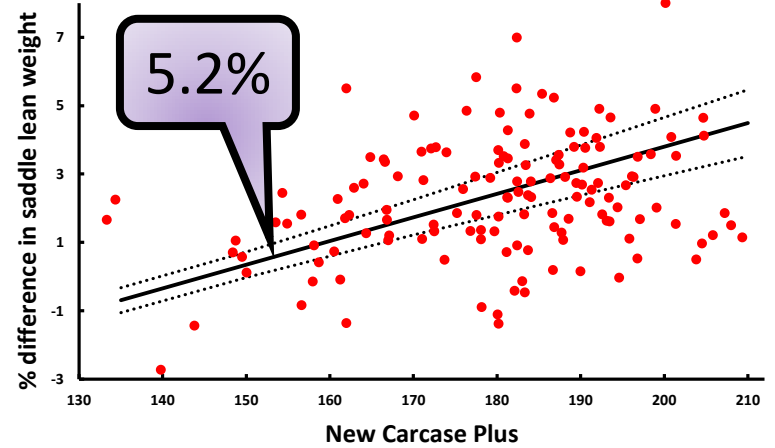
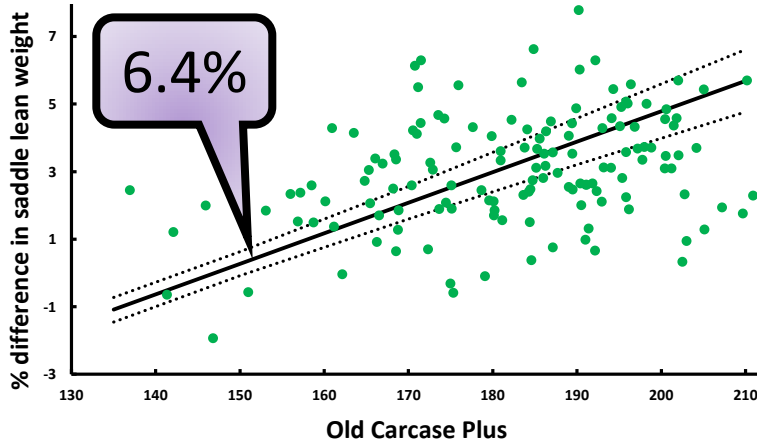
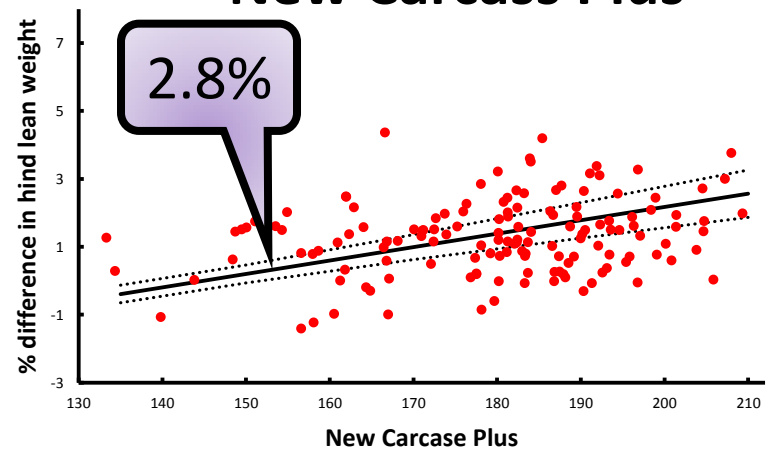
Primal Region	Carcase Composition		Retail Analysis		Gross Profit Analysis	
	Weight (kg)	Yield %	Value (\$)	Prpnt (%)	Prpnt (%)	GP (%)
FQ	3.798	16.9%	\$58.42	26.4%	-0.5%	-0.3%
Loin	2.977	13.3%	\$76.95	34.7%	77.5%	35.8%
HQ	4.396	19.6%	\$76.38	34.5%	40.7%	18.9%
Lean Trim	0.979	4.4%	\$9.79	4.4%	-17.7%	-64.2%
Total	12.150	54.2%	\$221.54	100.0%	100.0%	16.0%



Old Carcass Plus



New Carcass Plus



No effect

$P < 0.01$

Old Carcass Plus

New Carcass Plus

% change kg lean \$ change

% change g lean \$ change

3.3%

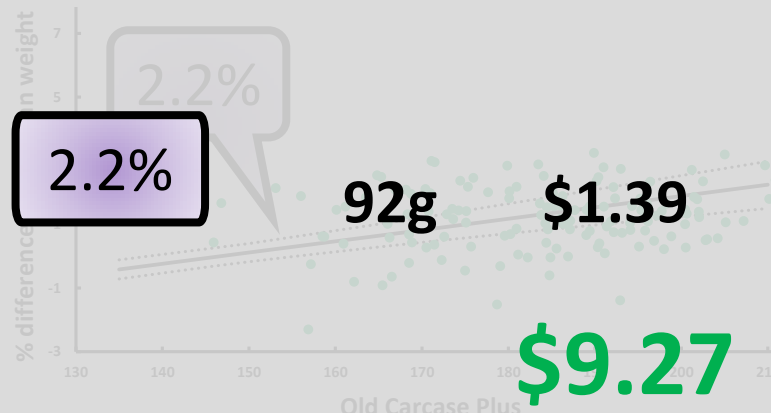
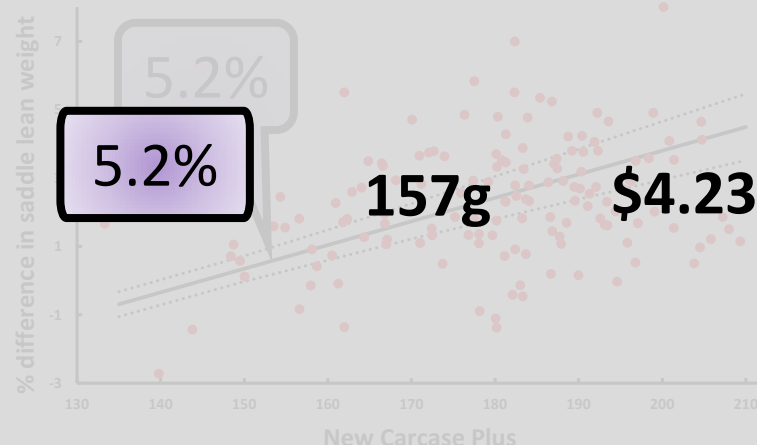
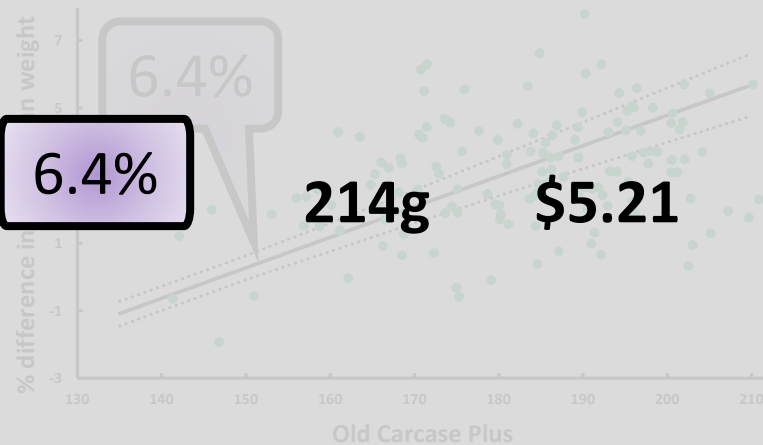
157g

\$2.67

2.8%

133g

\$2.26



No change 0 \$0

TOTAL

\$9.27

\$6.49

Old Carcass Plus

New Carcass Plus

% change kg lean \$ change

% change g lean \$ change

3.3%

\$2.26

\$2.78 more value with
Old Carcass Plus

6.4

\$4.23

2.2%

92g \$1.39

No change

0 \$0

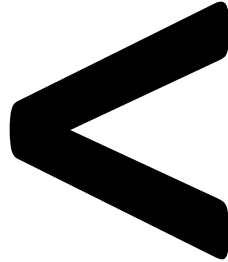
TOTAL

\$9.27

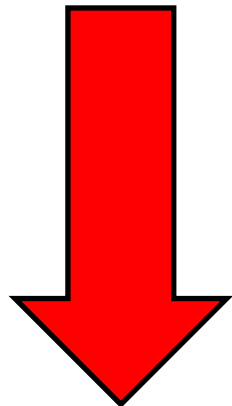
\$6.49

Hypothesis Carcass Plus

**NEW
Carcass
Plus**

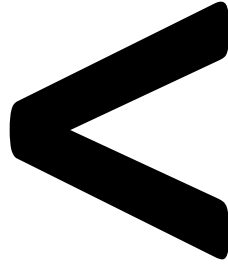


**OLD
Carcass
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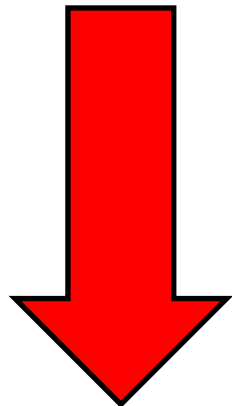


Hypothesis Carcass Plus

**NEW
Carcass
Plus**



**OLD
Carcass
Plus**



Impact on processors



Impact on processors

4000 carcasses processed per day

X

\$2.78 less lean per carcass (NewCP)

Impact on processors

4000 carcasses processed per day

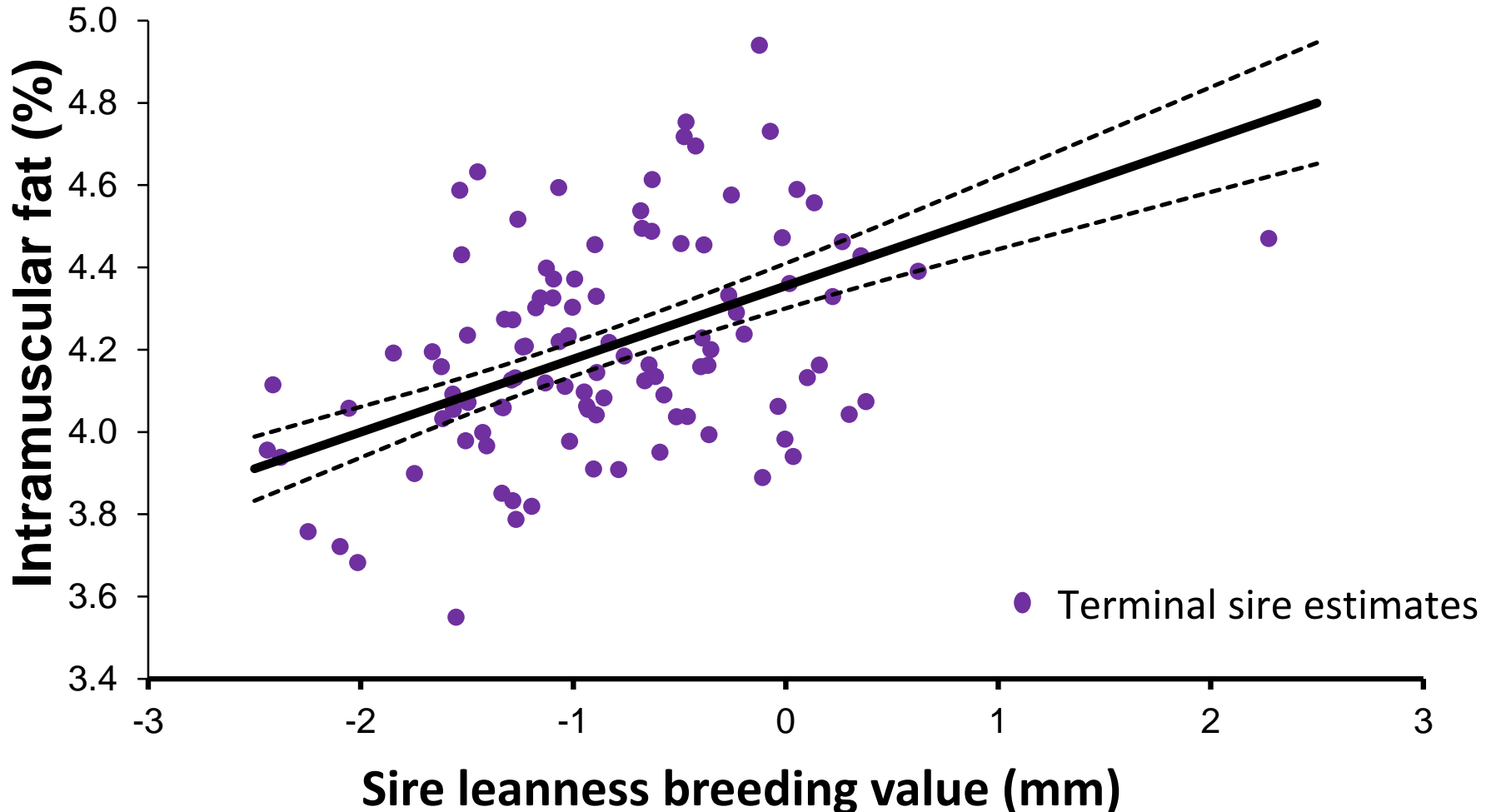
X

\$2.78 less lean per carcass (NewCP)



\$11, 120 less per day

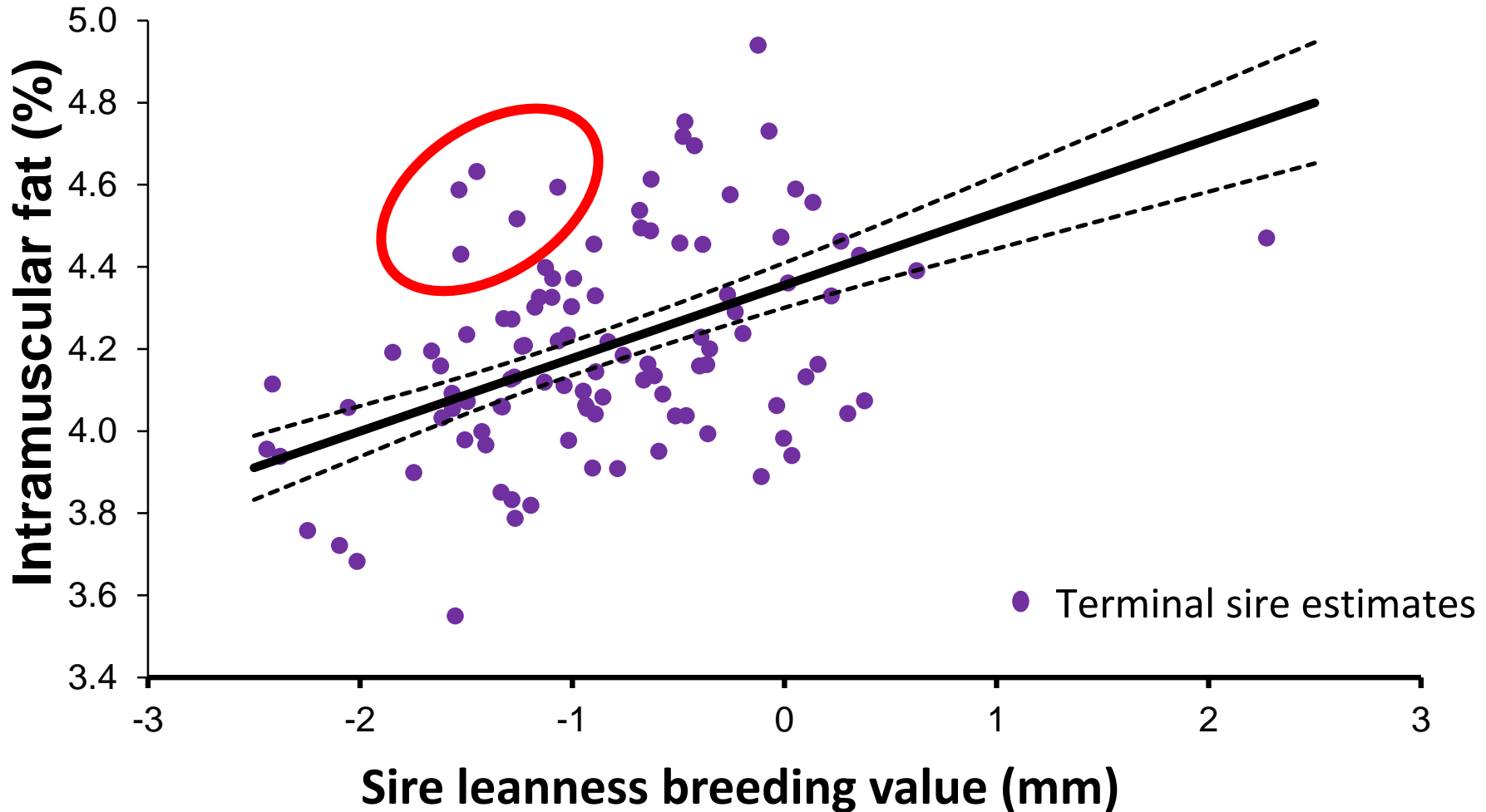
Leanness breeding value



Pannier, L., et al. "Intramuscular fat in the *longissimus* muscle is reduced in lambs from sires selected for leanness." *Meat Science* (2013).

P < 0.01

Leanness breeding value



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P < 0.01

Conclusion

- Carcass plus will still  LMY%

BUT

- Changes to Carcass Plus  carcass \$

- New breeding values should be used to maintain eating quality.



