Selection for muscling increases dressing percentage in lambs

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Outline

- Dressing Percentage
- Sire breeding values for carcase traits
  - Sire PWWT ASBV
  - Sire PFAT ASBV
  - Sire PEMD ASBV
- Carcase traits increase carcase weight via dressing percentage
Dressing %

- Viscera early maturing (Dressing% worse in younger/smaller lambs)
- Leaner lambs have higher dressing %
Breeding Values

- Growth (PWWT)
- Fat depth (PFAT)
- Eye muscle depth (PEMD)
Breeding Values

- Growth (PWWT)
- Fat depth (PFAT)
- Eye muscle depth (PEMD)
Breeding Values

Evidence that lean carcasses dress higher

- Fat depth (PFAT)
- Eye muscle depth (PEMD)
Hypotheses

- Increased dressing% = bigger carcase

- Reduced fat depth (PFAT)

- Eye muscle depth (PEMD)

No effect on carcase wt
Methods
Sheep CRC Information Nucleus Flock

- Katanning 1000 Ewes
- Turretfield & Struan 1000 Ewes
- Hamilton & Rutherglen 1000 Ewes
- Armidale 1000 Ewes
- Trangie & Cowra 1000 Ewes
Sire Types

100 sires used each year, representing...

Terminal

Maternal

Merino
Sire Types

100 sires used each year, representing...

- Growth (PWWT)
- Reduced fat depth (PFAT)
- Eye muscle depth (PEMD)
Phenotypic Analysis

Carcase Trait

4 yrs Data

Data analysed

- 8 sites
- 4 years data
- 363 sires
- 7325 lambs analysed

- Pre-slaughter weight after 6h curfew
- Carcase weight
- Dressing %
# Phenotypic Analysis

## Carcase Trait

*4 yrs Data*

### Data analysed
- 8 sites
- 4 years data
- 363 sires
- 7325 lambs analysed

## Fixed Effects
- Site
- BTRT
- Sex
- Sire Type
- Dam Breed (ST)
- Kill Group (Site)

## Covariates
- PWWT
- PFAT
- PEMD

## Random
- Sire
- Dam
Phenotypic Analysis

**Carcasse Trait**
- 4yrs Data

**Data analysed**
- 8 sites
- 4 years data
- 363 sires
- 7325 lambs analysed

**Fixed Effects**
- Site
- BTRT
- Sex
- Sire Type
- Dam Breed (ST)
- Kill Group (Site)

**Covariates**
- PWWT
- PFAT
- PEMD

**Random**
- Sire
- Dam
Results
Higher dressing% in heavier lambs!

- Graph showing the relationship between pre-slaughter live weight and dressing percentage.
- The graph indicates a positive correlation with a 2.0% increase in dressing percentage for every unit increase in live weight.
PFAT
Carcase Effects
PFAT - They’re Heavier!

**Carcase Weight**

- **Terminal**
- **Maternal**
- **Merino**

1.0 kg

**Hot Standard Carcase Weight (Kg)**

-3 -2 -1 0 1 2 3

Sire PFAT ASBV

- The diagram shows a scatter plot comparing Hot Standard Carcase Weight (Kg) against Sire PFAT ASBV for Terminal, Maternal, and Merino sheep.
- TheTerminal sheep have a heavier carcase weight on average.
- There is a noticeable difference of 1.0 kg between Terminal and Maternal sheep.
PFAT - They’re Heavier!

Carcase Weight

Reflects live wt at slaughter!

1.0 kg

No dressing% effect!
PEMD

Carcase Effects
PEMD - They’re Heavier!

Hot Standard Carcase Weight (Kg)

Sire PEMD ASBV

Maternal
Terminal
Merino

1.3 kg
PEMD - They’re Heavier!

Carcass Weight

No effect on live wt at slaughter!
PEMD – effect delivered by dressing%

Dressing Percentage

- Maternal
- Terminal
- Merino

1.5 %
PEMD – effect delivered by dressing%

Dressing Percentage

Maternal

Terminal

Merino

1.5 %

Carcass Weight

1.3 kg

PEMD ASBV
Hypotheses

- Increased dressing% = bigger carcase

- Reduced fat depth (PFAT)

- Eye muscle depth (PEMD)

No effect on carcase wt
Hypotheses

- Increased dressing% = bigger carcase

- Reduced fat depth (PFAT)✓

- Eye muscle depth (PEMD)✗

No effect on carcase wt
Feed Efficiency

- Feed efficiency tested in 3 studies
- Sire breeding values for carcase traits
  - Sire PEMD ASBV -0.5 → +2.2
- One negative response
- One positive response
- One non-response
Feed Efficiency

- Feed efficiency tested in 3 studies
- One negative response
- One positive response
- One non-response

No consistent feed efficiency effect
Feed Efficiency

- Feed efficiency tested in 3 studies
- Sire breeding values for carcase traits:
  - Sire PEMD ASBV: -0.5 → +2.2
- One negative response
- One positive response
- One non-response

But heavier carcase for same liveweight = More feed efficient!
Conclusion

- PFAT = heavier carcase due to impact on liveweight
- PEMD = heavier carcase due to impact on dressing percentage
- PEMD effect represents efficiency advantage!
Collaborators

- Andrew Williams
- Liselotte Pannier
- Jason Siddell
- David Pethick
- Alex Ball
- Sue Mortimer
- Kelly Pearce
- Robin Jacob
- James Rowe
P W W T

Carcase Effects
PWWT - They’re Heavier!

**Carcase Weight**

- **Maternal**
- **Merino**
- **Terminal**

**Hot Standard Carcase Weight (Kg)**

- Sire PWWT ASBV

![Graph showing the relationship between Sire PWWT ASBV and Hot Standard Carcase Weight for Maternal, Merino, and Terminal breeds.](image)