

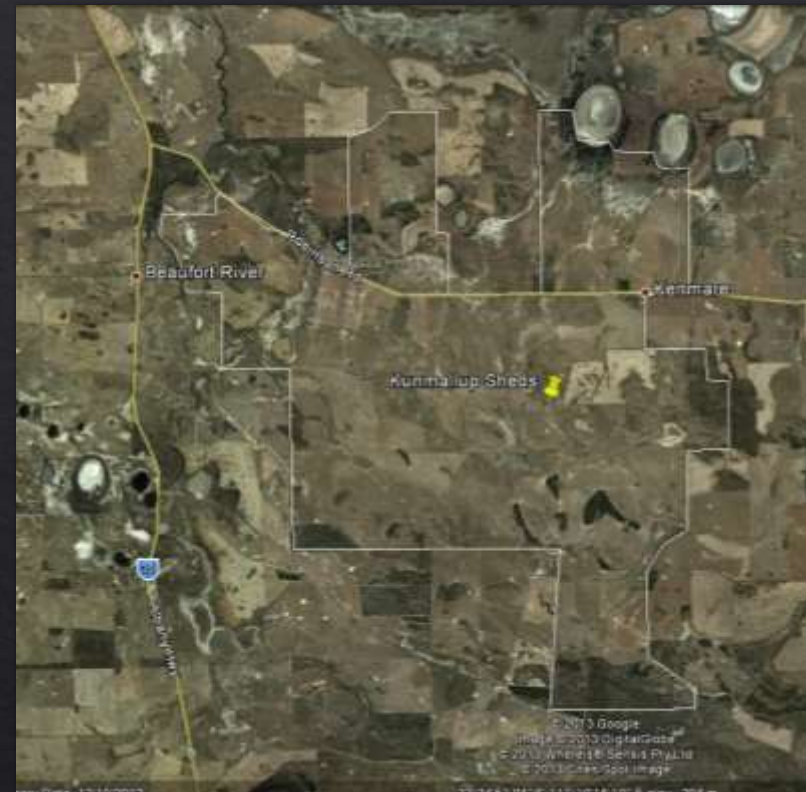
# Perspective on Sheep Genetics in Australia

Bindi Murray

Sheep, Wool and Grain Farmer,  
Sheep Producers Australia Chair



# Our Farm 'Kunmallup Pastoral'





Current Total Area:

24,000 acres

Productive area:

16,500 acres

Sheep area:

8,500 – 11,000 acres

30,000 DSE

Future Total Area:

13,500 acres

Productive area:

9,500 acres

Sheep area:

5,000-5,500 ha

18,000 DSE



# Sheep Enterprise

- ◇ Dryland rainfed
- ◇ Winter crops only.
- ◇ Sown, permanent and volunteer pastures
- ◇ Growing season rain (April-October) Mediterranean
  - ◇ Average 13 inches
  - ◇ Range 6-17 inches





# Sheep operations

- ◇ Winter Lambing, Summer Shearing
- ◇ Supplementary feeding for 6-12 months of the year
- ◇ Crop stubble residues in Summer
- ◇ Confinement in Autumn
- ◇ Feed-lotting in summer to winter.
- ◇ Self replacing Merino with Suffolk Terminal sires and Merino Nucleus Flock





# The role of sheep genetics in our system

- ◇ 2000 Terminal rams EBV only
- ◇ 2004 Defined written breeding objective
- ◇ 2007 All rams purchased with ASBV
- ◇ 2010 Closed ewe nucleus flock
- ◇ 2015 Flock Genomics Profile pilot NF
- ◇ 2019 Merino Lamb Feedlot Trial (external)
- ◇ 2020 EID in Nucleus flock
- ◇ 2021 EID in breeding ewe lambs
- ◇ 2023 Genomic benchmarking NF



# Breeding Objective

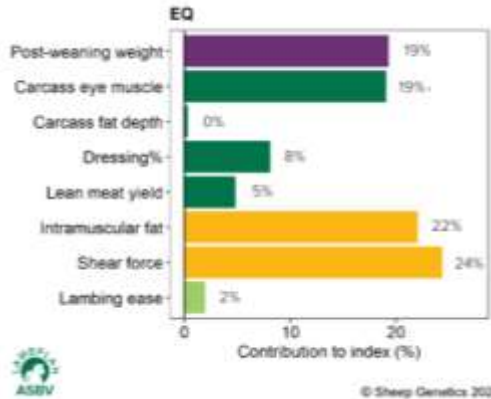
## Kunmallup Pastoral Breeding Objective - Merino Flock

Trait (ASBV)	Direction
Yearling Clean Fleece Weight (YCFW)	+/=
Post Weaning Weight (PWWT)	+
Yearling Weight (YWT)	+
YFAT	+/=
Adult Weight (AWT)	+/=
Yearling Staple Strength (YSS)	+/=
Late Dag (LDAG)	-
Yearling Eye Muscle Depth (YEMD)	+
Yearling Fibre Diameter (YFD)	-/=
Yearling fibre diameter CV (YDCV)	=/-
Yearling WEC (YWEC)	-/=
Number of Lambs Weaned (NLW)	+/=
Early Breach Wrinkle (EBWR)	-/=
Early Breach Cover (EBCOV)	-/=
Merino Index	Merino Lamb Index (prev Merino plus)
Terminal Index	Eating Quality (prev TCP)
Conformational Traits (Physical)	
Dag	</= score 2
Bodywrinkle	</= score 2
Feet	neat hooves, straight legs sound pastens
Facecover	</= score 3
Black wool	cull, Black eyes to Terminal
Wool colour	</= score 2, no dermo or fleece weathering
Hock cover	Reduce





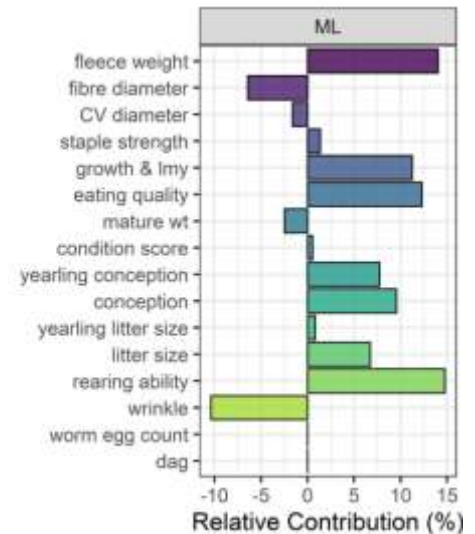
# Genetic Indexes



LambPlan and MerinoSelect databases via SGA

MerinoSelect updated in 2024 with EQ and resilience, LambPlan in 2019

Merino Lamb and EQ

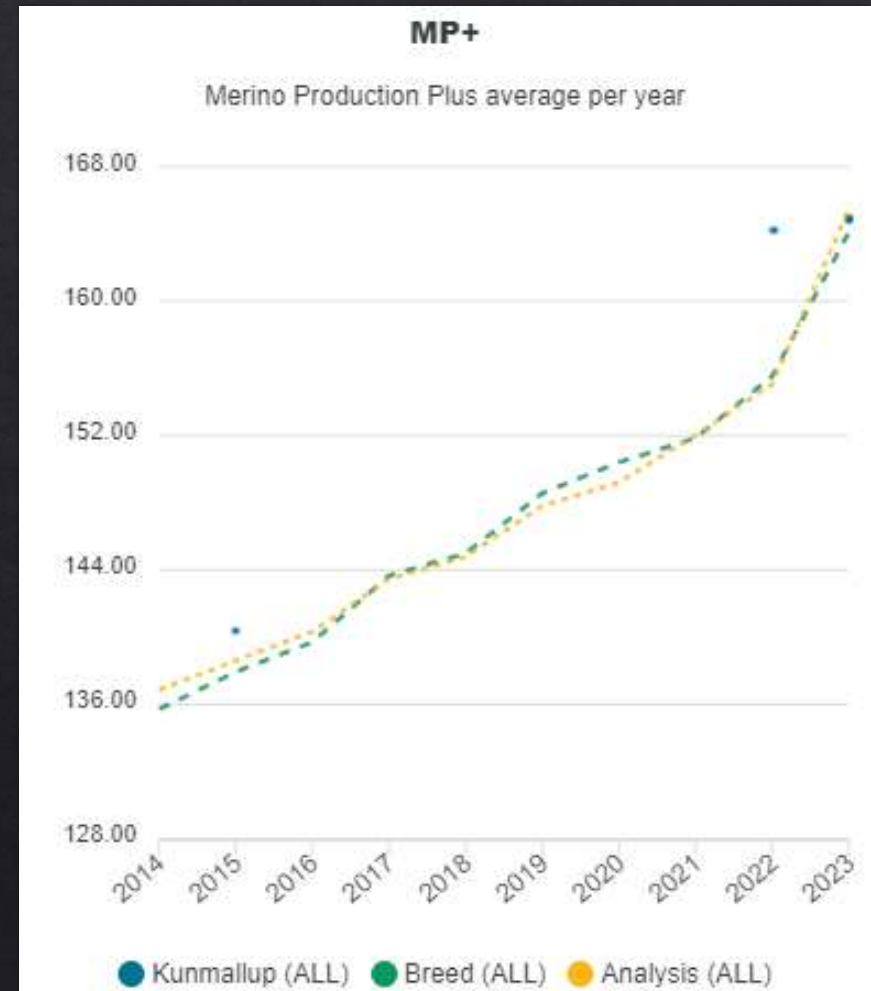




# Genetic Progress and Performance Merino Production Plus Index

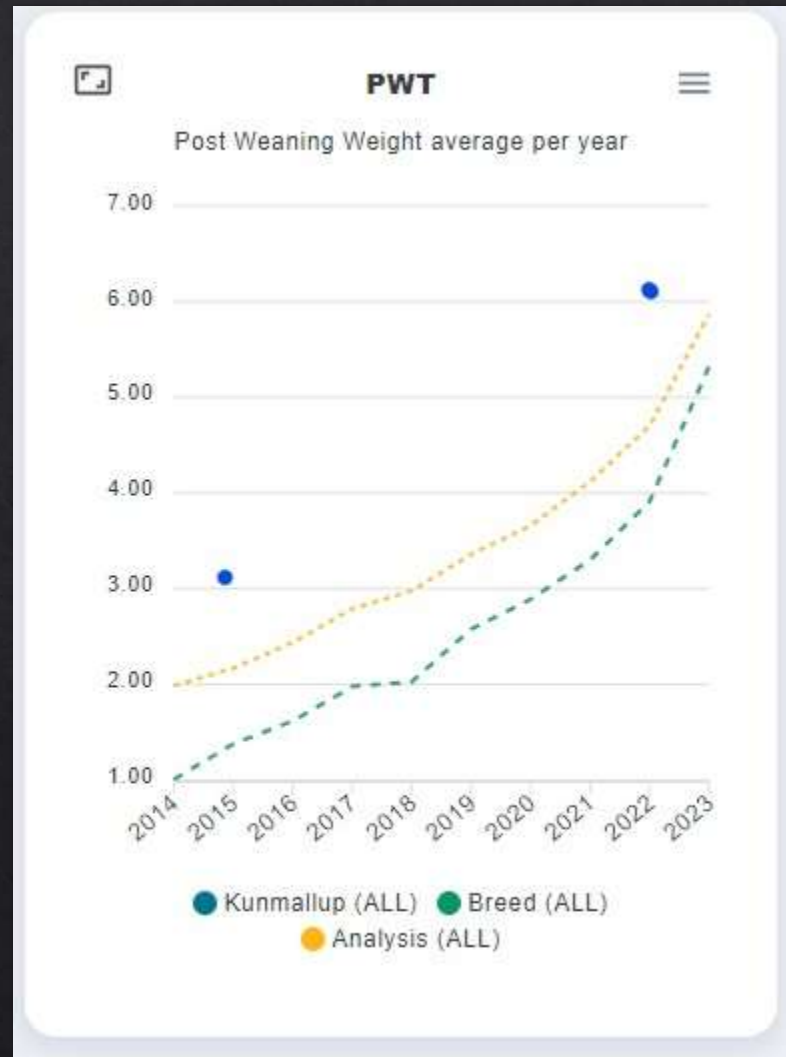
MP+ index

Trait	Likely Response	Contribution to economic gain (%)
Fleece Weight	+4.3%	13%
Fibre diameter	-0.8 $\mu$ m	21%
Body Weight	+5.0kg	24%
CV of FD	-0.8%	2%
Staple Strength	+3.1N/ktex	16%
Number of Lambs Weaned	+7%	25%



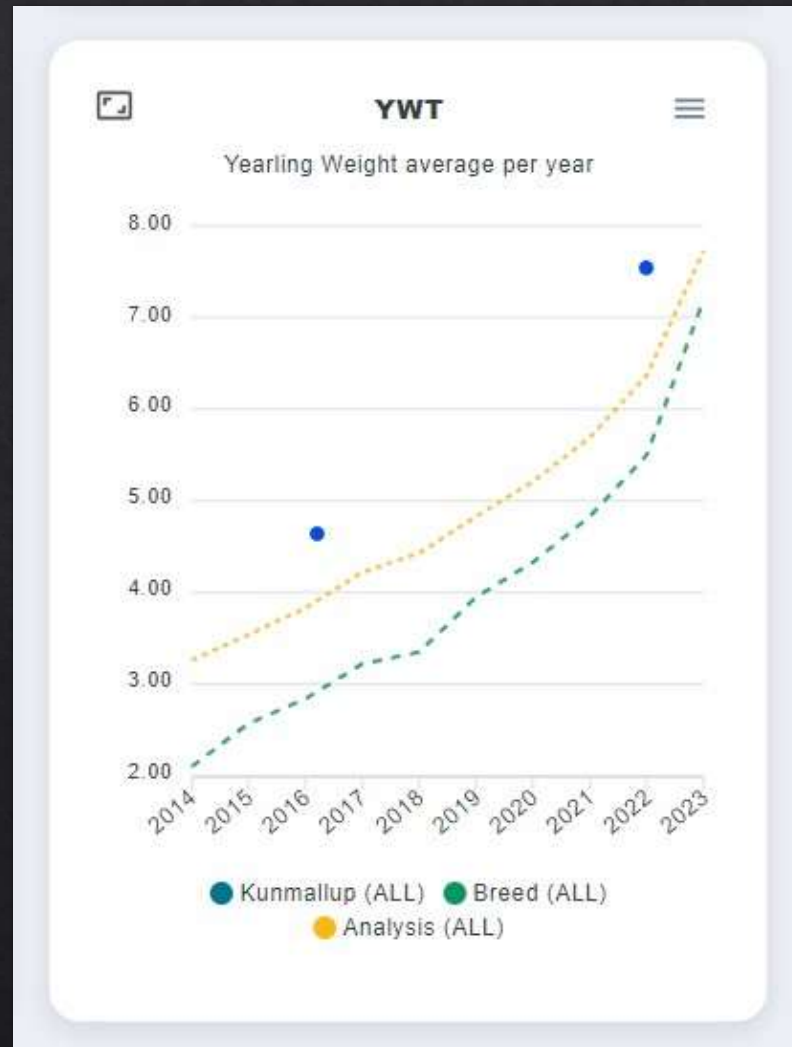
# Genetic Progress and Performance

## Post Weaning Weight





# Genetic Progress and Performance Yearling Weight



# Genetic Progress and Performance

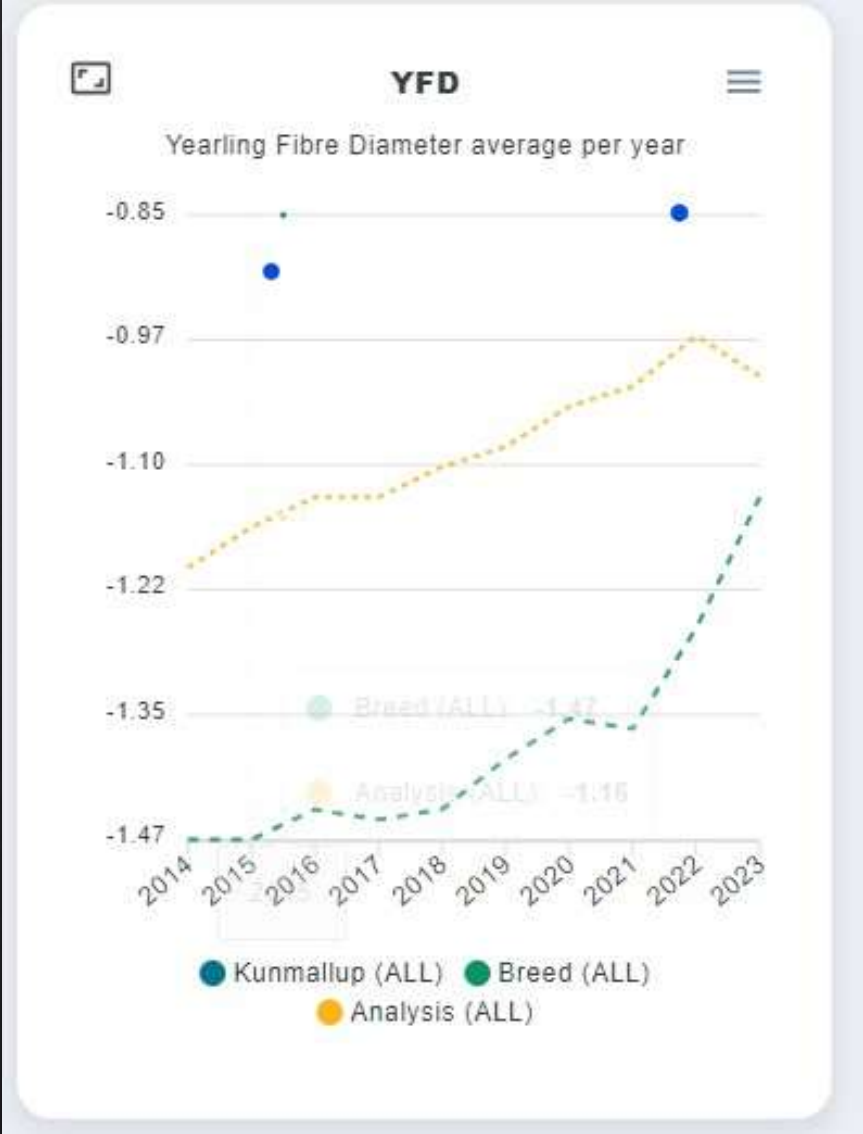
## Yearling Clean Fleece Weight





# Genetic Progress and Performance

## Yearling Fibre Diameter



# Why Genetics?

- ◆ Production vs resilience traits
- ◆ INF project
- ◆ SGA product development testing
- ◆ Commercial farmers vs studs





# Australian Industry Investment in Sheep Genetics

- ❖ Sheep Genetics Australia commenced in 2005 with approx. 2.5M records. Levy funded division of MLA
- ❖ Resource flocks have allowed novel traits to be introduced to analysis and now inform more indexes
- ❖ Genomics has enhanced ASBVs and allowed commercial flocks to benchmark
- ❖ Database allows us to track industry genetic progress and reporting

Figure 4: Merino indexes (2014–23)

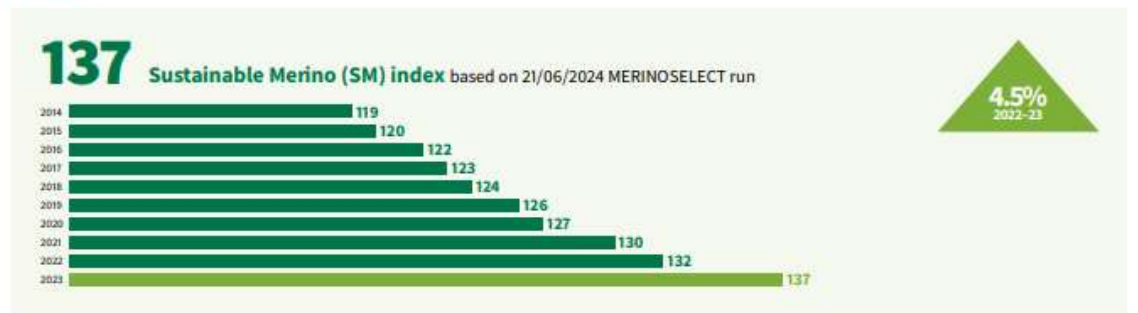


Figure 5: Terminal indexes (2014–23)

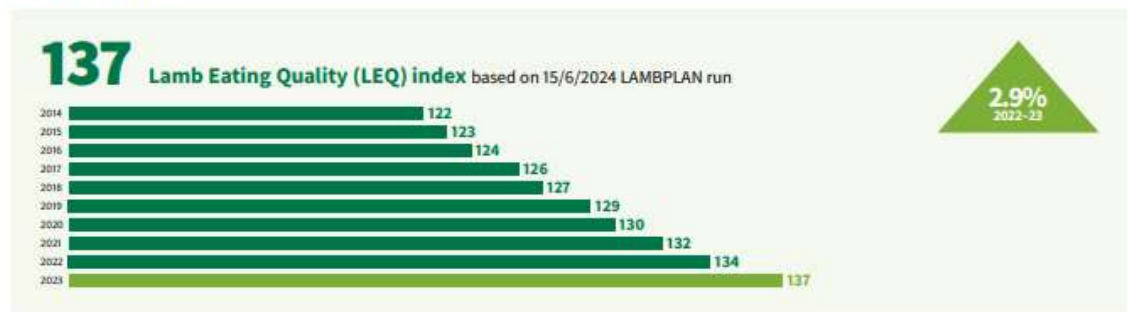
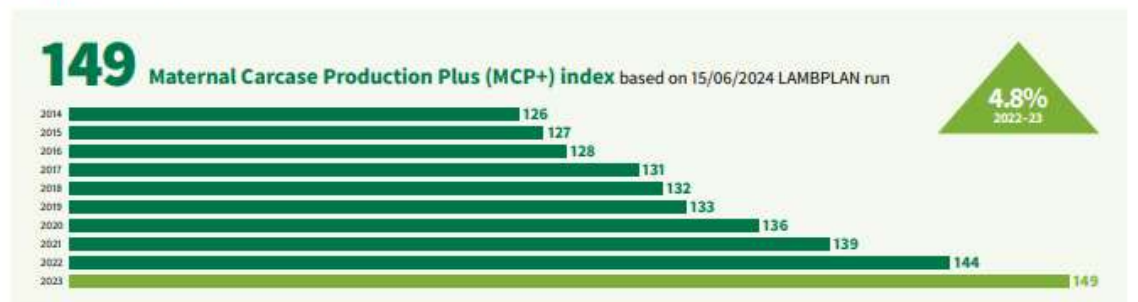


Figure 6: Maternal indexes (2014–23)



# Sheep Genetics in Australia

- ◆ Developing and refining the genetic tools for our industry.
- ◆ Consumer choices present challenges and opportunity
- ◆ Important traits going forward will be hard to measure phenotypically (methane/efficiency, health, well being)
- ◆ If you decide to drive a Ferrari, you need a good map and an agreed destination!

## 2023–24 Sheep Genetics highlights



**4.1M**  
animals in  
the database



**2.8M**  
animals in  
the database



**3.9M**  
animals in  
the database



**4%** average  
genetic gain  
across the three main analyses



**30K** animals  
evaluated  
for KIDPLAN members



**>1,400** seedstock and  
commercial  
producers **attended events** hosted/  
supported by Sheep Genetics



**19%** reduction in  
genomic pedigree  
inconsistencies across evaluations



**113%** increase  
in knowledge for MateSel  
training attendees

**2/3**

of the data provided  
to Sheep Genetics  
was submitted  
through the **self-managed portal**



**66%** of active  
flocks  
impacted by service provider  
training – **31 attendees**,  
representing **314 flocks**



The launch of Ewe-niquely  
Genetics – a Sheep Genetics  
podcast, debuted in the  
**top 15** science podcasts  
on Spotify



# Thank you for the opportunity

- ◆ Bindi Murray
- ◆ [bindi@kunmallup.com.au](mailto:bindi@kunmallup.com.au)
- ◆ [Chair@sheepproducers.com.au](mailto:Chair@sheepproducers.com.au)
- ◆ +61 409 347 299

The logo for Sheep Producers Australia is displayed in a white rectangular box. It features the word "SHEEP" in a large, bold, sans-serif font, with "PRODUCERS" in a smaller, bold, sans-serif font directly below it, and "AUSTRALIA" in an even smaller, bold, sans-serif font at the bottom. The text is centered and flanked by thin horizontal lines above and below the word "AUSTRALIA".

**SHEEP**  
**PRODUCERS**  
**AUSTRALIA**