

# **AWI GENETICS PROGRAM 2021 – 2022**

**SHEEP EASY, WILLIAMS**

**ELLIE BIGWOOD**



## ACTIVE PROJECTS - AWI GENETICS PROGRAM 2021-22

### Merino Lifetime Productivity (MLP) 2015/24; AMSEA and 5 Site partners

- 5,700 ewe progeny from 134 Industry Sires measured for life
- 5 foundation ewes (super fine to medium) AI'd across 5 diverse environments; Balmoral Vic, Pingelly WA, Temora NSW, Trangie NSW and Armidale NSW
- Last data to be collected June 2024, 24% remaining



### MLP Analysis; AWI & AGBU 2021-25

- What is the earliest age to assess lifetime productivity?
- What is the right balance of visual and objective assessments?
- What impact do site environments/ewe bases have on the expression of traits?
- How well do the current indexes reflect profitability?



---

## ACTIVE PROJECTS - AWI GENETICS PROGRAM 2021-22



### Genetic Evaluation Productivity Efficiency and Profitability GEPEP 2018/23; AWI, MU, DPIRD

- Current sheep evaluation systems are based on a 'blunt' use of \$ per DSE
- Aims to use feed intake total body energy and efficiency estimations to improve current indexes
- Using the Pingelly MLP F1 wethers, then ewes
- A complex area, will need further refinement, but Merinos need gains in efficiency that intensive livestock have obtained

---

## ACTIVE PROJECTS - AWI GENETICS PROGRAM 2021-22



### Breeding for Resilience 2018/22; AWI & CSIRO

**Resilience - an animal's ability to cope with challenges they face in their environment, to survive and return to being productive**

Testing associations between immune responses and 1) carcass, 2) growth and 3) disease traits in New England MLP wethers

- Develop & validate methodologies to assess resilience in Merino sheep
- Cost-benefit analysis of selecting for improved resilience across different production systems
- Working towards an index to describe an animal's genetic potential to be resilient, to survive and produce



## ACTIVE PROJECTS - AWI GENETICS PROGRAM 2021-22

### Anti-Mullerian Hormone 2018/25 – Adelaide Uni, Centre Plus



- AMH is a marker hormone produced by the ovary
- Other breed R&D has shown high blood levels at young ages are correlated with earlier cycling and more lifetime progeny
- Testing New England MLP and Centre Plus 2018 drop ewes at 4 months old and correlating with lifetime number of progeny

Centre Plus Merino Stud  
Rob and Mark Mortimer



## Slide 5

---

**GL1**

Geoff Lindon, 11/08/2021

---

## ACTIVE PROJECTS - AWI GENETICS PROGRAM 2021-22

### Merino Genetic Benchmarking R&D 2021/25; NSW SMBA Trust (MERINOSELECT, Sire Evaluation, Wether Trials, Flystrike Genomics)

- Adoption of MLP project outcomes into MERINOSELECT
- Welfare, resilience and feed efficiency outcomes into indexes
- Creation of visual trait, faecal consistency and urine stain ASBVs
- Lower worm burden protocols for ASBVs data collection
- DNA Flock profiling and impact on wether trials
- Genomics of dark fibre and flystrike
- Investigate the collection of genomic reference flock data using ram breeder flocks



---

## ACTIVE PROJECTS - AWI GENETICS PROGRAM 2021-22

### Merino Sire Evaluation Committee – Site Oversight and Link Sires

Site Committees run the Sire Evaluation Sites. Entrant fees = Site Costs

For 2021, 105 sires and >5,000 progeny at

- Yardstick, Muresk WA
- Meningie SA
- Balmoral Vic
- New England, Macquarie, Boorowa, Yass NSW

Annual publication of sires result in Sept each year Merino Superior Sires

New listing of top 25 high use sires on MSS website

High use of key Link Sires add robustness to results





## ONGOING FOCUS - AWI GENETICS PROGRAM 2021-22

### Cervical AI using frozen thawed semen – Sydney Uni

- Use of frozen / thawed semen results in 20% conception, need 70%
- Reduce costs to grower and increase use of high-quality semen

### Sexed Semen – Total Livestock Genetics

- Updated technology commercialized 2019-20,
- Aiming for 90-95% chosen sex with similar conception results to unsorted semen

### Flystrike Genomics – CSIRO, DPIRD, UNE, AGBU

- Need to establish contemporary Genomic Reference Flock

### Dark Fibre Genomics – Adelaide Uni, AGBU

- Genetic suppression of pigmented fibres
- albinism gene found in other sheep breeds



The University of Sydney



The University of Sydney



---

## ONGOING FOCUS - AWI GENETICS PROGRAM 2021-22

### Wether Trials – NSW DPI



Department of  
Primary Industries

### Semen Standards and Predictors of AI Success – Sydney Uni, NSW SMBA Trust

- Derive quality standards for thawed semen
- Database of AI outcomes could point to why some programs have variable results

### Improving success of Sheep AI programs – SARDI

- Investigated synchrony of oestrus, plugs and drugs
- Final analysis and publication of results in 2022



The University of Sydney



### AWI Smart Tags

- Potential to assess ram and ewe reproductive behaviours, including lambing date, behaviour ease



Government of South Australia  
Department of Primary Industries  
and Regions



## BREEDING SURVEY & TREND DATA - AWI GENETICS PROGRAM 2021-22

### Merino National – 66% Polls and 34% Horns

- WA 74% Polls and 26% Horns



78% of Merino rams are purchased, 22% bred by owner

In WA, 24% of growers use external classers, 56% class their own and 20% don't class



### MERINOSELECT Genetic Trends – Key Traits Improving

Drop	acfw	yfd	asl	ass	ywt	Y fat	yemd	yfec	nlw	ebwr	ebcov	ldag	MPP
Birth	ASBV	ASBV	ASBV	ASBV	ASBV	ASBV	ASBV	ASBV	ASBV	ASBV	ASBV	ASBV	Index
2005	3.4	-1.2	0.3	0.1	1.2	0.0	0.3	-1.3	-1.7%	-0.1	-0.1	-0.0	122
2010	6.3	-1.1	2.7	0.3	2.6	0.1	0.4	-8.1	-0.7%	-0.1	-0.1	-0.0	129
2015	10.1	-1.0	4.5	0.7	3.7	0.1	0.4	-12.2	-0.1%	-0.1	-0.1	-0.0	136
2019	14.1	-0.9	5.7	0.6	5.0	0.1	0.4	-10.5	1.8%	-0.2	-0.1	-0.0	146

Source; SheepGenetics July 2021

# ACKNOWLEDGEMENTS

---

## MLP



## OTHERS

AMSEA



Syd Uni



The University of Sydney

Adel Uni



AGBU



SARDI



Government of South Australia

Department of Primary Industries and Regions

MLP



MU



DPIRD



Department of Primary Industries and Regional Development

CSIRO



MLA



NSW DPI



Department of Primary Industries

NSW Stud Merino Breeders Trust



# KEEP IN TOUCH

- **AWI Website** - [wool.com/sheep/genetics](http://wool.com/sheep/genetics)
- **AMSEA Website** - [www.merinosuperiorsires.com.au](http://www.merinosuperiorsires.com.au)
- **Sheep Genetics Website** – [sheepgenetics.org.au](http://sheepgenetics.org.au)
- **Regular articles AWI Beyond the Bale**

