Practical Breeding Program Issues – Lamb Industry

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GENE 422/522 – Topic 21

Alex Ball

Prime Lamb Breeding Systems

- Traditional 2nd cross lambs
- First cross – terminal
- First cross – maternal
- Dual purpose maternal
- Merino

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Breeding Structure – 1st Cross Lambs

Border Leicester x **Merino** → **1st cross lambs**

ewes **wethers**

1st cross dams

prime lambs

ewes and wethers

1st cross ewes

Terminal x **Merino** → **1st cross lambs**

Due to high ewe prices some producers retain 2nd cross ewes

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Breeding Structure – 2nd Cross Lamb

1st cross ewe x Terminal → ewes and wethers

Due to high ewe prices some producers retain 2nd cross ewes

2nd cross ewes

2nd cross lambs

Breeding Structure - Dual Purpose

Coopworth x Coopworth
Corriedale x Corriedale

→ lambs

ewes wethers

Replacement ewes

prime lambs

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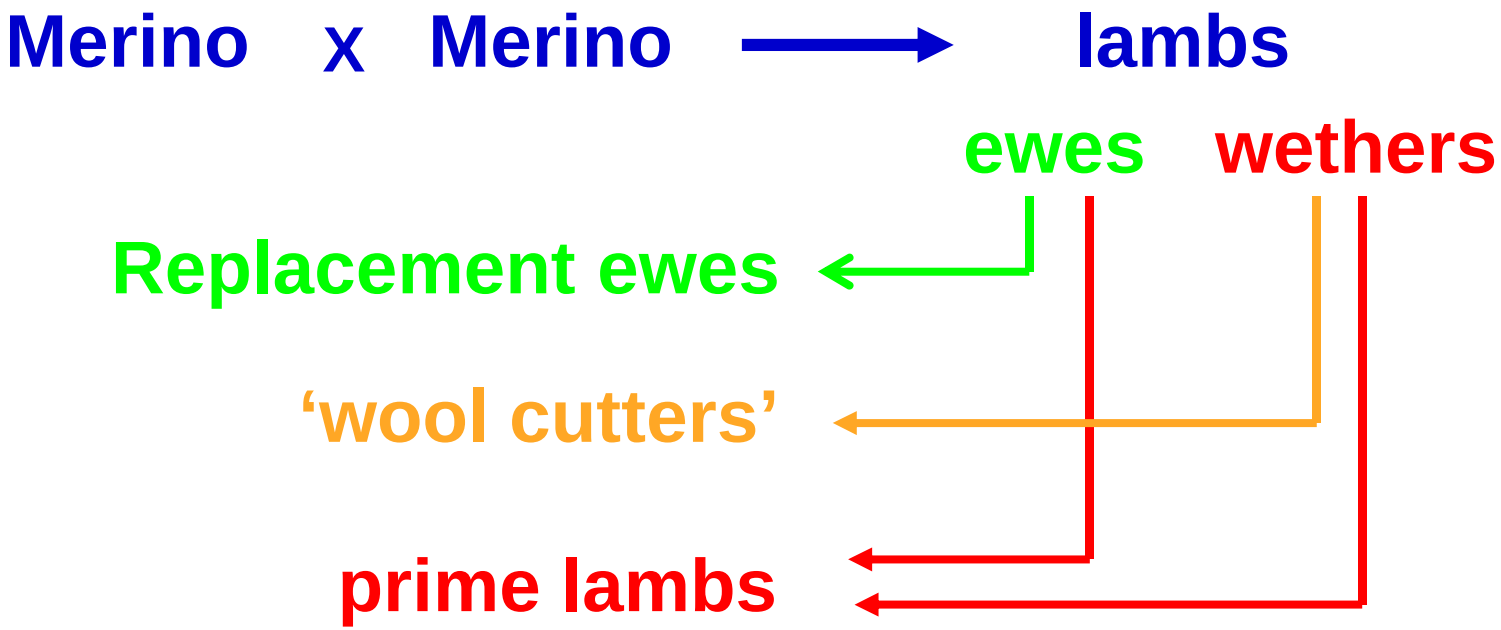
Breeding Structure - Merino



Prime Lamb Supply

- Traditional 2nd cross lambs (5.1M)
- First cross – terminal (6.8M)
- First cross – maternal (2.1M)
- Dual purpose maternal (1.2M)
- Merino (4.0M)

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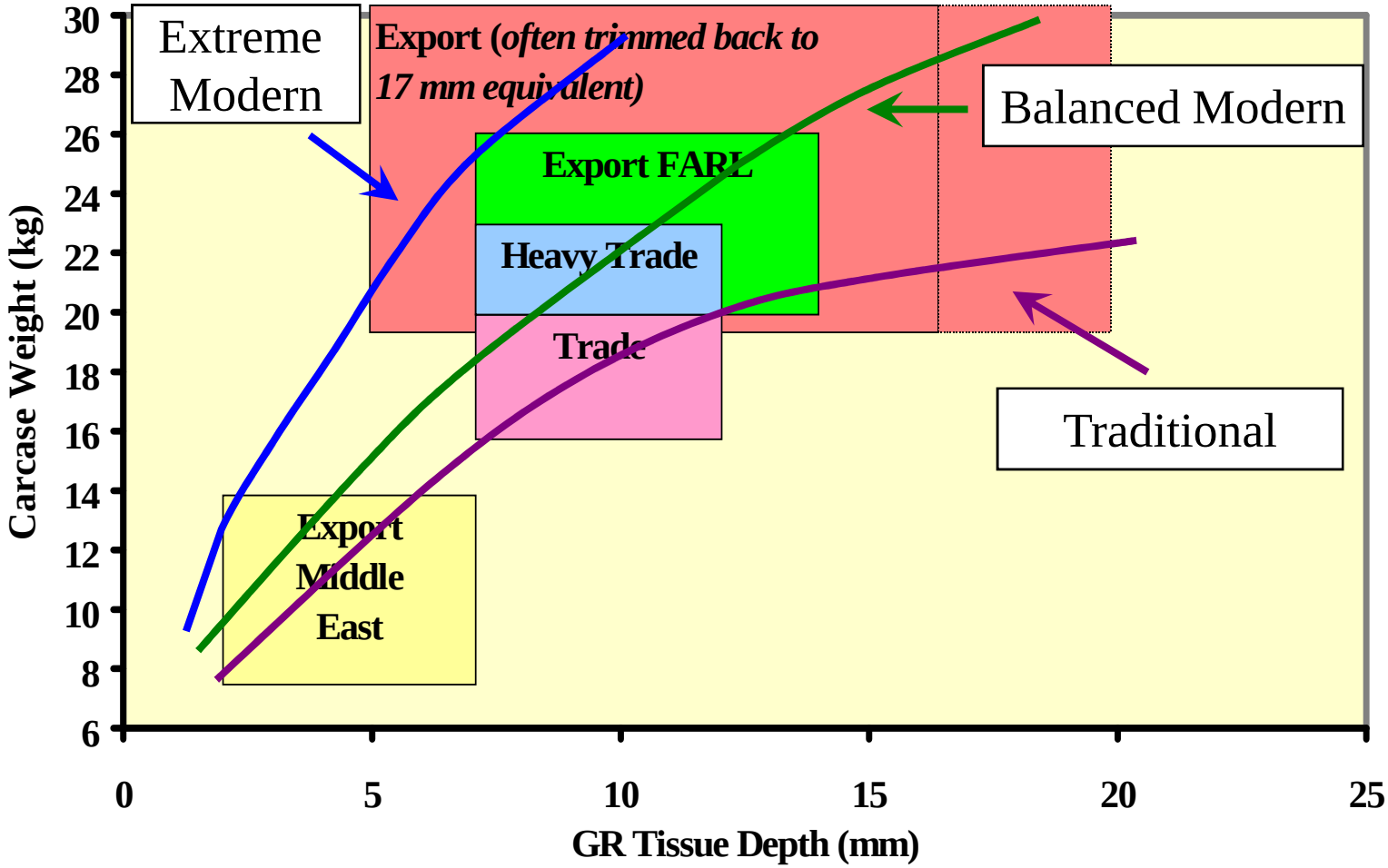
Prime Lamb Market Specifications



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Genetic Selection Opportunities

SHEEP GENETICS AUSTRALIA

• mla MEAT & LIVESTOCK AUSTRALIA • australian wool innovation limited •

LAMBPLAN

LAMBPLAN ASBV

MERINOSELECT

MERINOSELECT ASBV

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ASBV Options for Lamb Producers

Age	Weight	FAT & EMD	Wool Traits	Scrotal Circ.	FEC
Birth	√				
Weaning	√				√
P. Wean	√	√		√	√
Yearling	√	√	√	√	√
Hogget	√	√	√	√	√
Adult	√		√		

Number of lambs born and weaned

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Terminal Sires Indicative h^2 & r_g

	BWT	WWT	PWWT	PFAT	PEMD
BWT	0.14	+ +	+ +	-	-
WWT		0.17	+ + +	-	-
PWWT			0.27	-	-
PFAT				0.16	+ +
PEMD					0.33

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Terminal Sires

- ~ 75,000 rams available annually
- From ~ 1200 breeders
- From 6 - 8 key breeds

Which ram, from ***which breed***, from ***which breeder***, will best suit your ***ewe type***, your ***production system*** and your ***market target*** ?

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Key Terminal Sire Traits

1. Growth
2. Fat depth
3. Eye muscle depth
4. Other
    1. Birth weight
    2. Lambing ease
    3. Faecal egg count

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Key Terminal Sire ASBVs

- PWWT – Post weaning weight
  - Growth at 7.5 months of age
- High growth rate means more weight for
- **More growth is better,**
- **….. but watch birth weight**
  - They eat less kilos of feed per kilo gained
- More valuable feeder lambs

Key Terminal Sire ASBVs

- PFAT – Post weaning fat depth
  - Genetic difference in fat depth in a 45kg live weight animal
- Use PFAT ASBVs to tailor fat depth for your market
  - Beware of extremes of fatness or leanness
- Excess fat is inefficient use of feed
  - It takes ~4 times more energy to produce 1kg of fat than it does to produce 1kg of muscle

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Key Terminal Sire ASBVs

- PEMD – Post weaning eye muscle depth
  - Genetic difference in eye muscle depth in a 45kg live weight animal
- EMD is positively related to weight and proportion of muscle in the loin and hind-quarter of the carcass
- Positive muscle with negative fat is even better for feed efficiency in growing lambs
- Variation in expression remains constant across environments

Maternal Sires

- 1st cross sires
  - eg. Border Leicester
- Self replacing
  - eg. Coopworth, Corriedale, composites
- Merino

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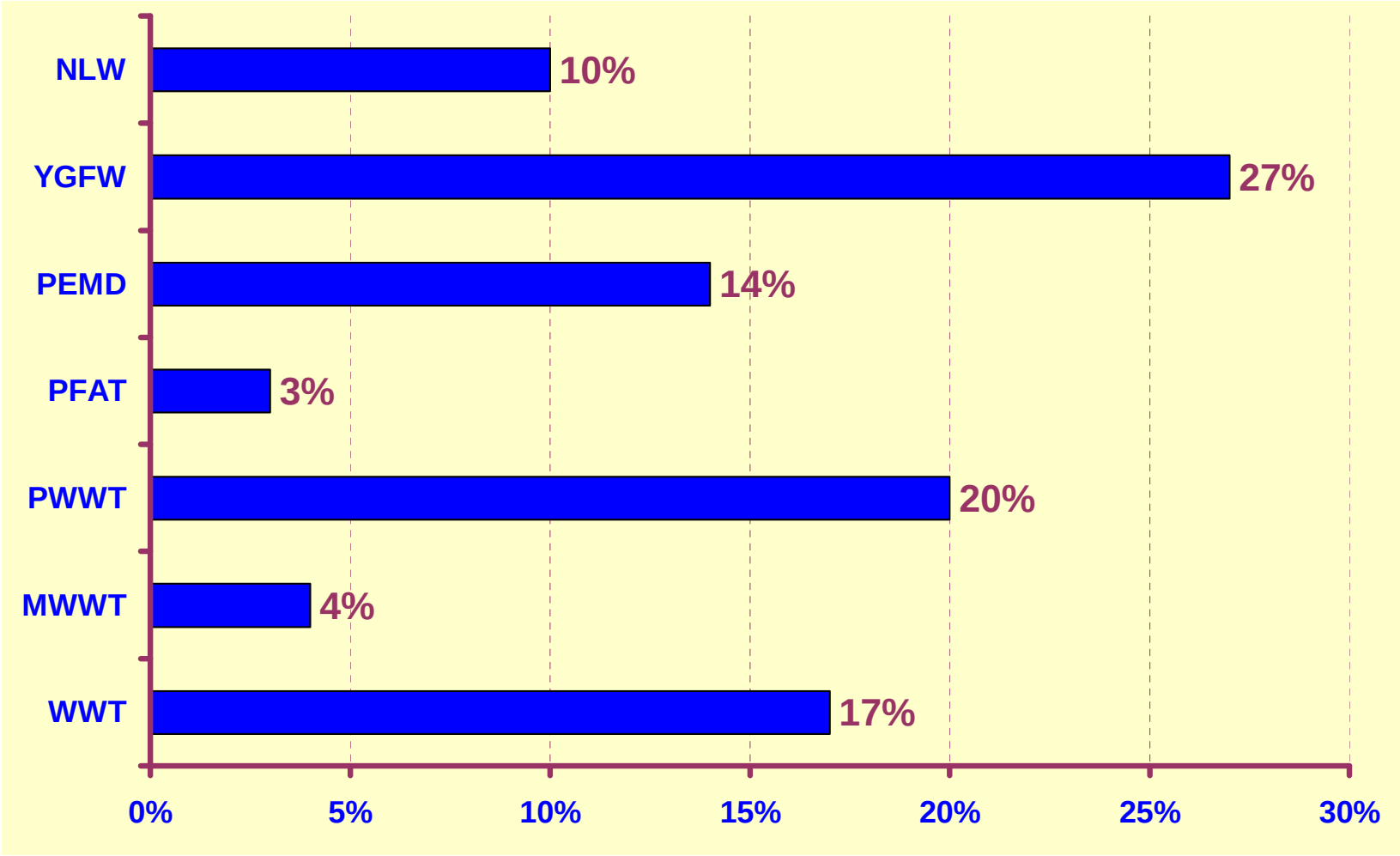
Key Traits for Maternal Sires

- Fertility
- Maternal capacity
- Growth rate
- Wool traits
- Carcase value
- Worm resistance
- Structural traits

Relative importance will vary across breeds

Border $Index



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Border $Index – Predicted Response

WWT	+ 4.4kg
MWWT	+ 1.1kg
PWWT	+ 8.2kg
PFAT	0mm
PEMD	+ 2.1mm
YGFW	+ 1.1kg
NLW	0.018

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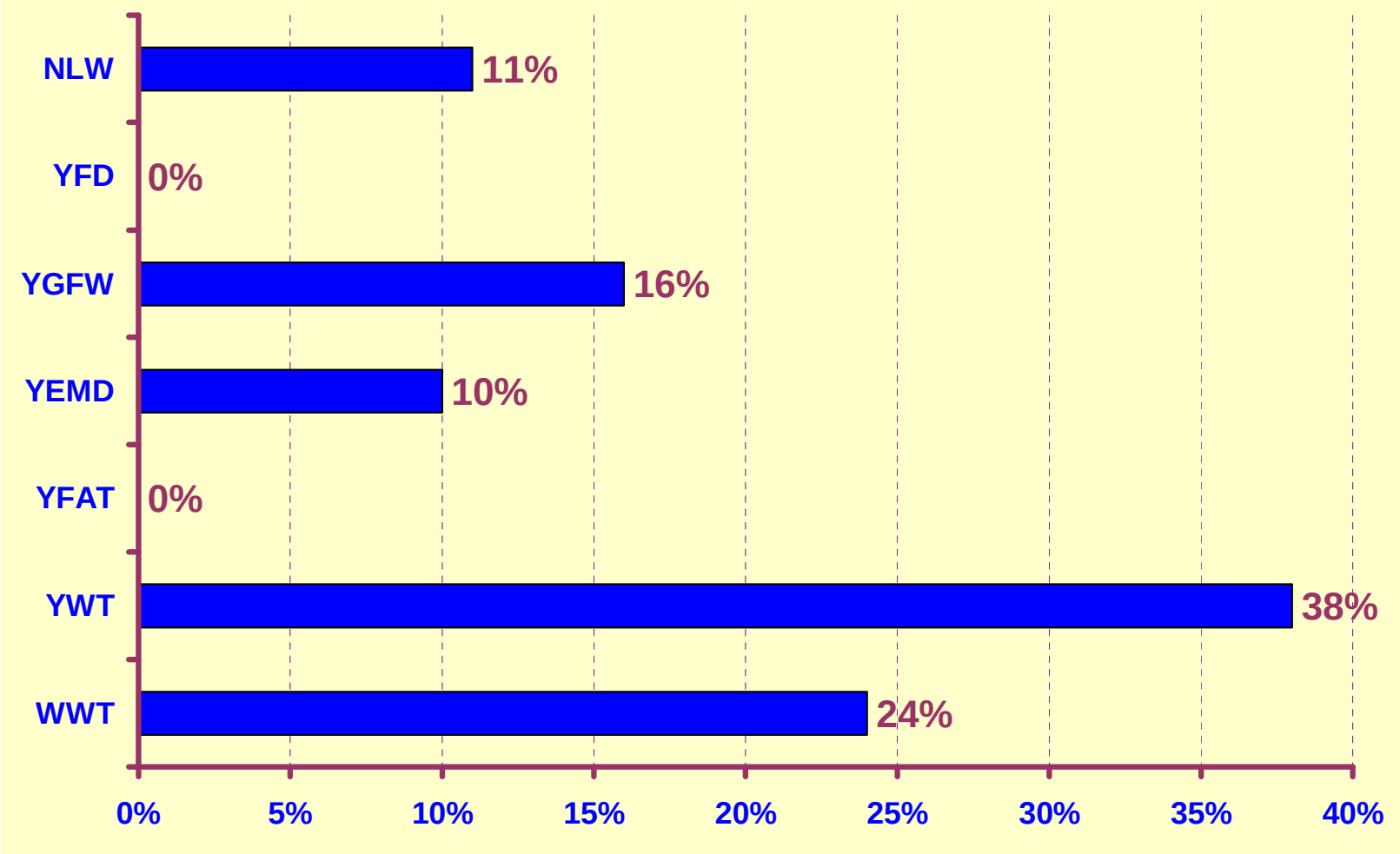
Coopworth Index



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Coopworth Index – Predicted Response

WWT	+ 2.0kg
YWT	+ 4.1kg
YFAT	0mm
YEMD	+ 0.3mm
YGFW	+0.21kg
YFD	+ 0.21u
NLW	+ 6%

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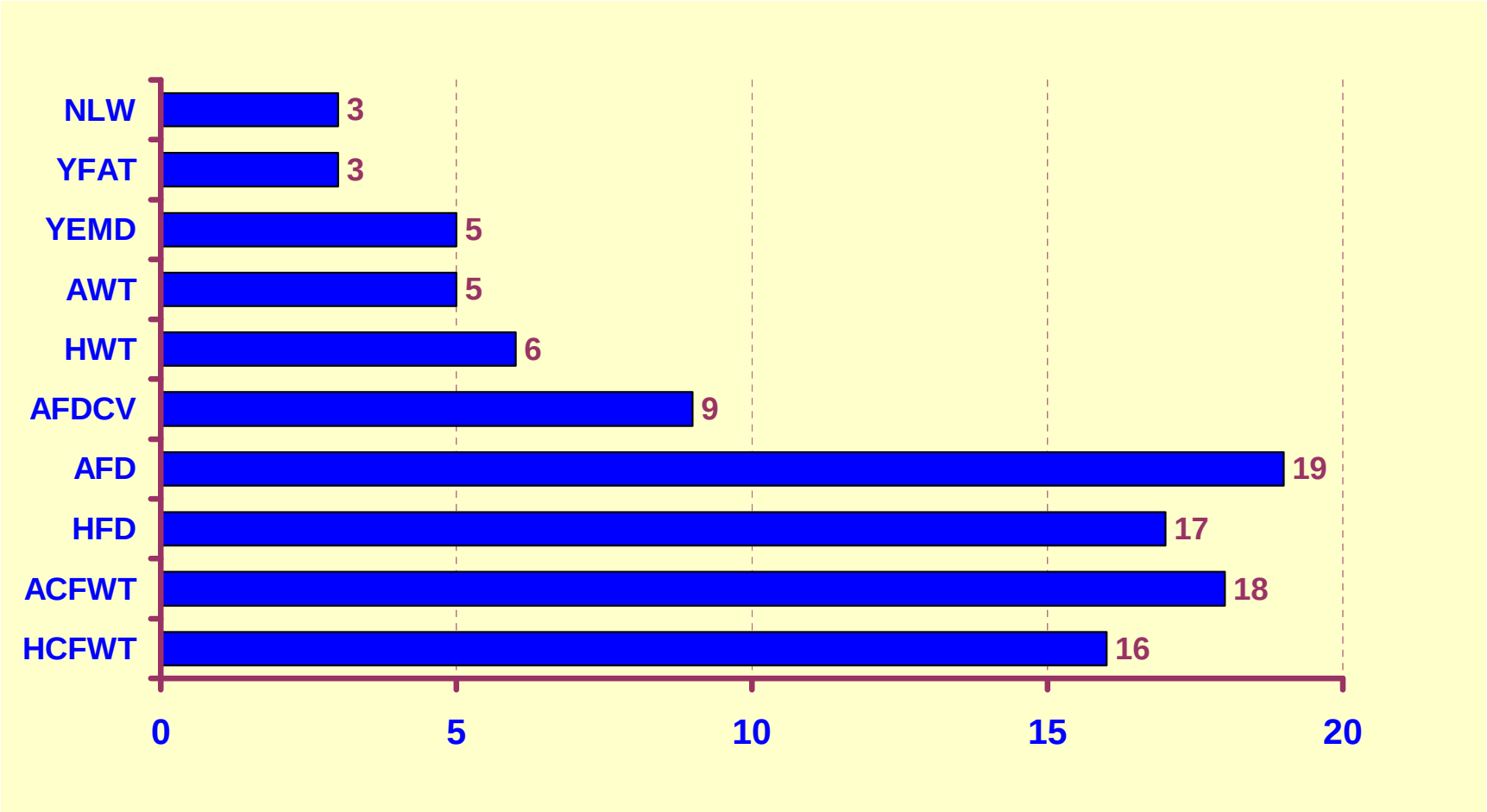
Merino 8% MP + Dual Purpose Index



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8%MP+DP Index – Predicted Response

HCFWT	0.37kg
ACFWT	0.44kg
HFD	-1.5u
AFD	-1.5u
AFDCV	0.7%
HWT	1.3kg
AWT	1.3kg
YEMD	0.5mm
YFAT	0.1mm
NLW	3%

Young Sire Programs

Young Sire Programs (YSPs)

- YSPs are run by a group of breeders who are prepared to work together to test a group of young sires (< 12mths)
- ASBV ranked ‘best bet’ ram lambs are selected and shared among the group to test a larger number while minimising the risk to each breeder

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Advantages of Young Sires

- High merit young males have high genetic merit - good genes.
- Young sires reduce generation interval.
- Usually cheaper - less is known about them.
- Use of AI improves genetic linkage across flocks contributing to higher quality, more reliable EBVs and Indexes.

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Disadvantages of Young Sires

- Not having progeny means individual young males have lower ASBV accuracy.
- Some young animals whose own information plus that of relatives suggest they are of high merit may therefore not breed that way.

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Establishing a YSP

- Elite young sires (<12 months) are selected
  - maximum number of sire and maternal grand-sire lines represented - inbreeding.
- 50-60 doses of semen per sire collected.
- Semen packages are designed
  - 3 young sires per package
  - Each sire is used in 3 separate studs
  - All flocks use 3 young sires
  - No two breeders get an identical package
  - Each team has similar average genetic merit

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Benefits Delivered by YSPs

- Quickly identify the best genetics
- Reduce generation interval
- Reduce inbreeding
- More accurate breeding values giving more reliable identification of rams for the next YSP
- Commercial clients benefit from more accurate breeding values and better genetics

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LAMBPLAN - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Address http://www.mla.com.au/lambplan/
www.lambplan.com.au
LAMBPLAN
Home
Tips & Tools
Reference
Search
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General
Contact
KIDPLAN
Merino Genetic Services
Meat & Livestock Australia
Maternal sire Central Progeny Test
Breeders Guide
Web Database Participation Form
Market News
Media Releases
Workshops ::
Prime Time - Prime Lamb
Breed update Mar 05
MEAT & LIVESTOCK AUSTRALIA
ANIMAL GENETICS AND BREEDING UNIT
LAMBPLAN - analysis by OVIS
Done
Local intranet

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Web Breeder Search Engine

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Web Animal Search Engine

Animal Enquiry by EBV

Home | EBV Enquiry | Member Enquiry | Sale Catalogues | Semen Catalogues | Download Files

Enter Selection Criteria Then Click Search

Clear | Search

Breed:	Any
Stud Name:	
LAMBPLAN Id(s):	*Enter one or more animal identifiers separated by commas* *Enter Animal Id. as follows:* *Flock Code - Year - Drop No.Eg. 070001-1999-990123* *Use wildcard (%) if required*
Birth Year(s):	*Enter one or more birth years separated by commas OR a range of years (eg. 1999-2001)*
Sex:	Any Male Female
Inbreeding Coefficient:	
Select if:	
Select if:	
Select if:	
Breeder's Group:	Any Meat Elite PLG Super Whites Texel YSP
Breeder Located in Region:	
Breeder Located in Postcode:	
Sire's Stud Name and Id.:	*Enter sire stud name and Id.* *(eg. xxxxxxxxxxxx-990123) to view his progeny*

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Custom Search by ASBV or Index

Trait Description	Min	Max	Trait Leader	Min. Accuracy (%)	Terminal Avg *
Birth Wt			☐		0.0
Weaning Wt			☐		3.5
Post Weaning Wt			☐		6.1
Yearling Wt			☐		5.8
Post Weaning Fat Depth			☐		-0.4
Post Weaning Eye Muscle Depth			☐		0.3
Yearling Fat Depth			☐		-0.6
Yearling Eye Muscle Depth			☐		0.1
Maternal Weaning Wt			☐		1.4
No. of Lambs Weaned			☐		5
Post Weaning Scrotal Circ			☐		1.5
Yearling Scrotal Circ			☐		1.4
Post Weaning FEC			☐		0.00
Yearling FEC			☐		0.15
Carcase Plus Index			☐		146
60:20:20			☐		134
Sort By: Stud Name / Id.	◉ Default	○ Ascending	○ Descending		
On EBV Listing Display	◉ Stud Name:	○ LAMBPLAN Id(s):			
* Terminal Avg. EBVs for 2004 Born Lambs(Click for Percentiles)					
Description of EBVs					

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The End