

Guide to Quality Data

The key to quality data

- Linkage
- Management groups
- Accuracy

Accounting for environment

- LAMBPLAN/MERINOSELECT analysis groups animals to account for many of the environmental effects
- Animals are grouped according to;
 - Sex
 - Age slicing e.g. 35 days for BWT and WWT
 - Year and season
 - Date of measurement
 - Breeder defined groups

Management Groups

- LAMBPLAN and MERINOSELECT account for environmental effects through the use of Management Groups
- **Key is to identify animals that have been treated differently prior to measurement**
- Breeder defined management groups
 - Birth weight – paddock effects
 - Weaning weight – paddock effects
 - Post weaning management group
 - Sickness
 - Orphan / fostered lambs
 - Show & sale teams

Good grouping

- Key is to identify animals that have been treated differently prior to measurement
- **Management Groups**
 - Birth (Base) Group
 - How the ewes were managed
 - during joining
 - during lambing
 - ETs vs others, paddock feed, foster lambs, etc
 - Stockbook – Genetic Management Group
 - Sapien – Dam Birth Mob
- **Subgroups**
 - WGRP; EPGRP; PGRP; YGRP; HGRP
 - How the animals are managed prior to measurement
 - Wethers, Show teams, etc
 - Stockbook – Performance Management Group
 - Sapien - Mob

Importance of Management Groups

Table 19: ASBVs with no management groups.

* using a heritability of 0.3 or 30% for Weight.

Animal	Weight (kg) (Difference from group average)	Group	ASBV (kg) - not adjusting for group*
080001	65 (+5)		$+ 5 \times 0.3^* = + 1.5$
080002	70 (+10)		$+ 10 \times 0.3 = + 3.0$
080003	60 (0)		$0 \times 0.3 = 0$
080004	55 (-5)		$-5 \times 0.3 = - 1.5$
080005	50 (-10)		$-10 \times 0.3 = - 3.0$
080006	60 (0)		$0 \times 0.3 = 0$
Average	60		

Importance of Management Groups

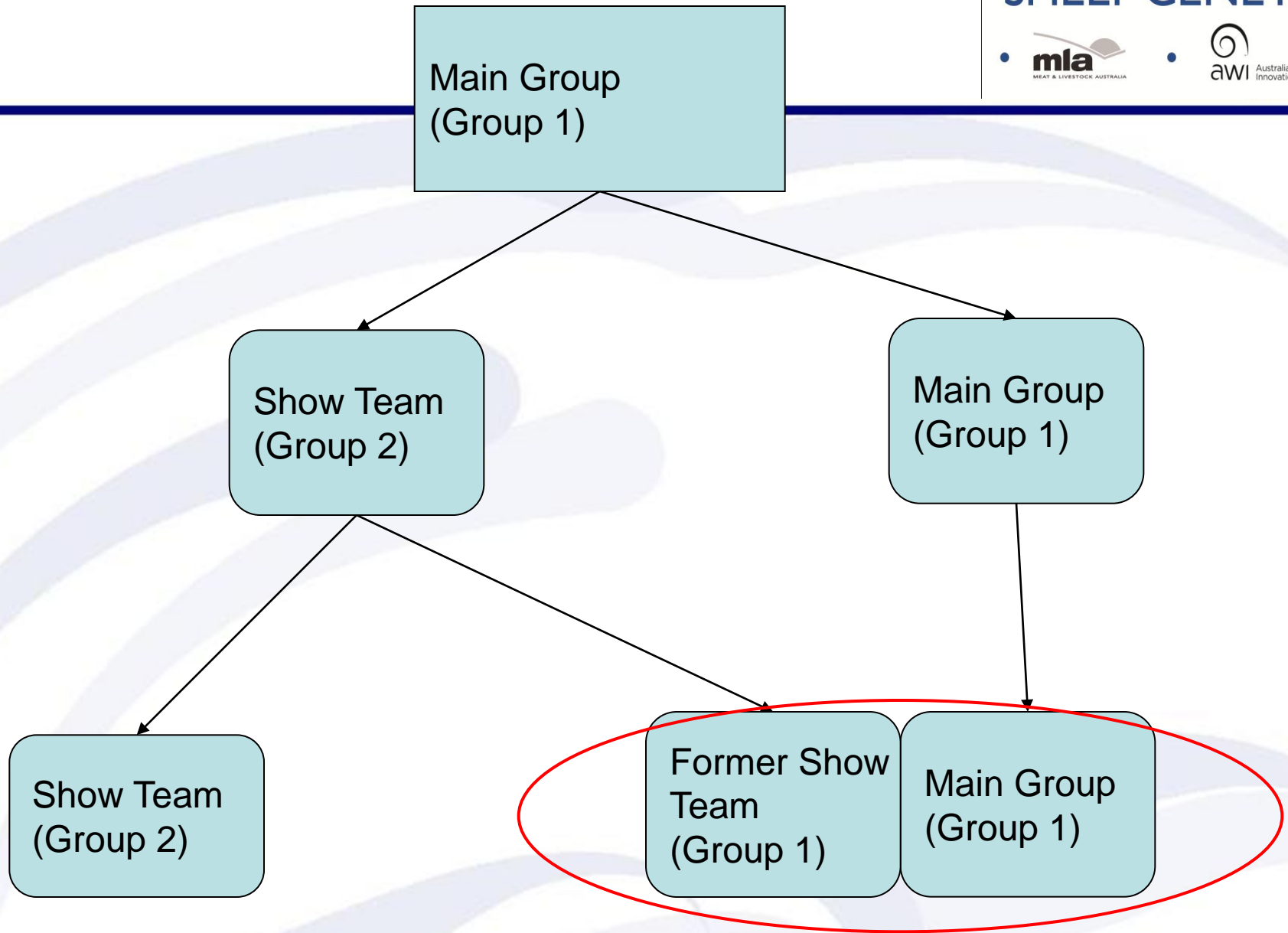
Table 20: ASBVs with management groups.

Animal	Weight (kg) (Difference from average)	Group	ASBV (kg) ~ adjusting for group*
080001	65 (0)	1	$0 \times 0.3 = \mathbf{0}$
080002	70 (+5)	1	$+ 5 \times 0.3 = \mathbf{+ 1.5}$
080003	60 (-5)	1	$- 5 \times 0.3 = \mathbf{- 1.5}$
Average for Group 1	65		
080004	55 (0)	2	$0 \times 0.3 = \mathbf{0}$
080005	50 (-5)	2	$-5 \times 0.3 = \mathbf{- 1.5}$
080006	60 (+5)	2	$+ 5 \times 0.3 = \mathbf{+ 1.5}$
Average for Group 2	55		

Importance of Management Groups

Table 21: Effect on ranking of animals

Animal	ASBV for Weight (kg)	
	Without Groups	With Groups
080002	+ 3.0	+ 1.5
080006	0	+ 1.5
080001	+ 1.5	0
080004	- 1.5	0
080003	0	- 1.5
080005	- 3.0	- 1.5



Main Group
(Group 1)

Show Team
(Group 2)

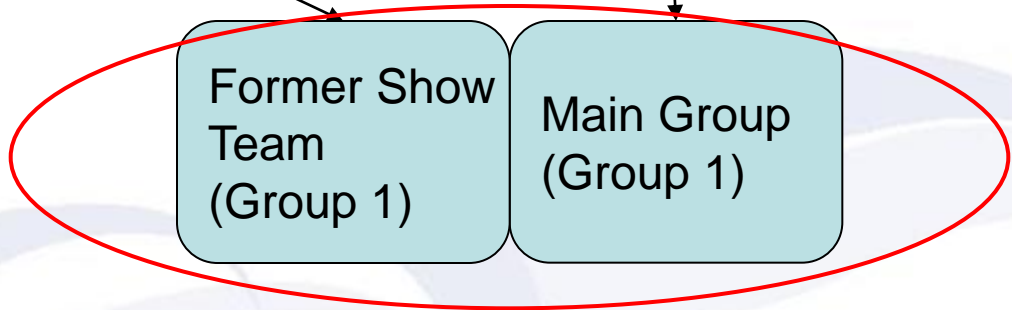
Main Group
(Group 1)

Once Grouped out animals are analysed separately for life

Show Team
(Group 2)

Former Show
Team
(Group 1)

Main Group
(Group 1)



Groups – as presented

Weaning

Yearling

Hogget

1
218

1
234

1
37

2
286

2
642

3
214

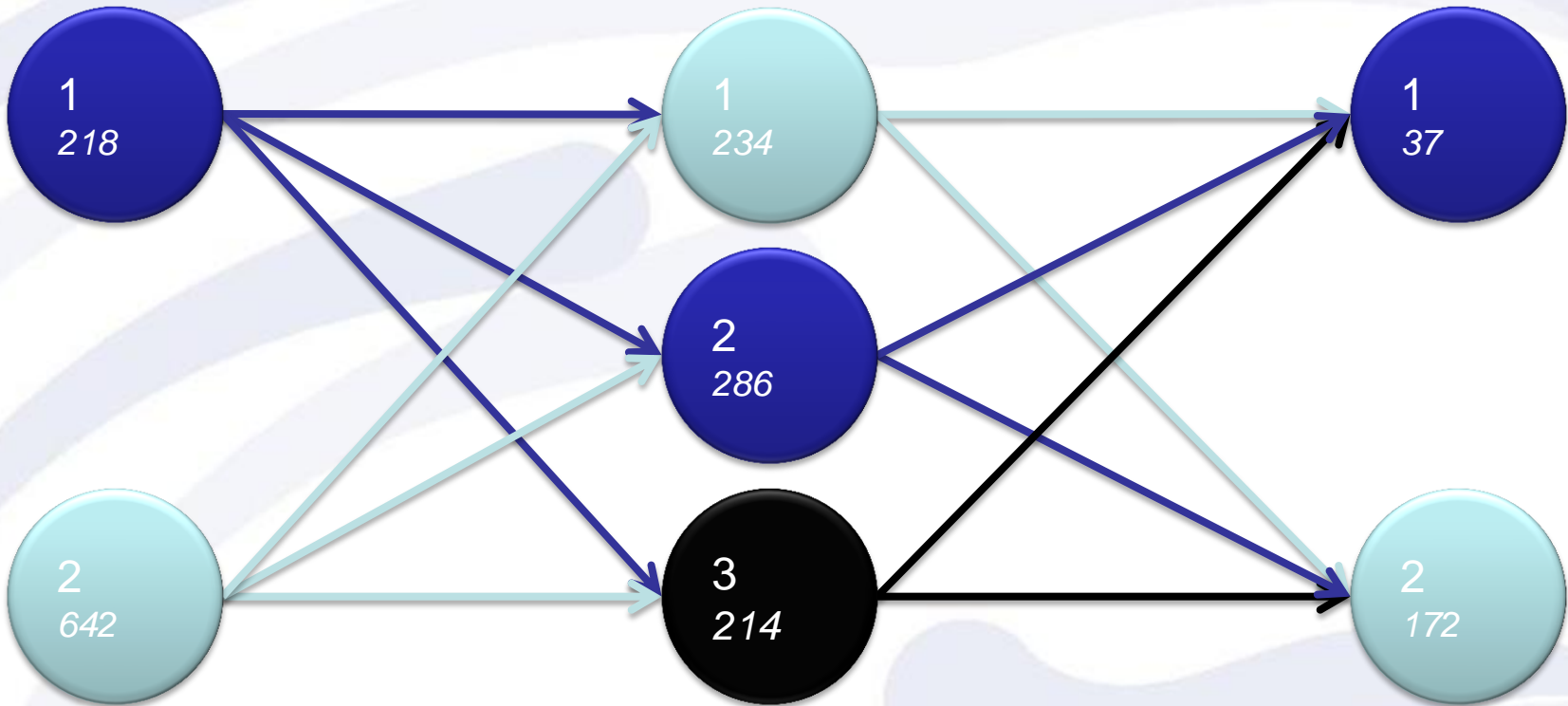
2
172

Groups – as analysed

Weaning

Yearling

Hogget



Weaning	1						2					
	218						642					
Yearling	1		2		3		1		2		3	
	56		88		29		158		177		169	
Hogget	1	2	1	2	1	2	1	2	1	2	1	2
	5	10	4	23	1	7	10	36	5	38	6	35

Single Sire Management Groups

Progeny from a single sire that are run together **do not** allow Sheep Genetics to separate genetic and environmental effects on performance

Single Sire Management Groups should be avoided!

Effective Progeny Records

Effective records are affected by:

- number of sires in the management group
- size of the group in which the animal is compared
- heritability of the trait
- correlation between the trait reported and the other records available
- accuracy of the parents' estimated breeding values
- the amount of performance information available on the animal itself and on its relatives.

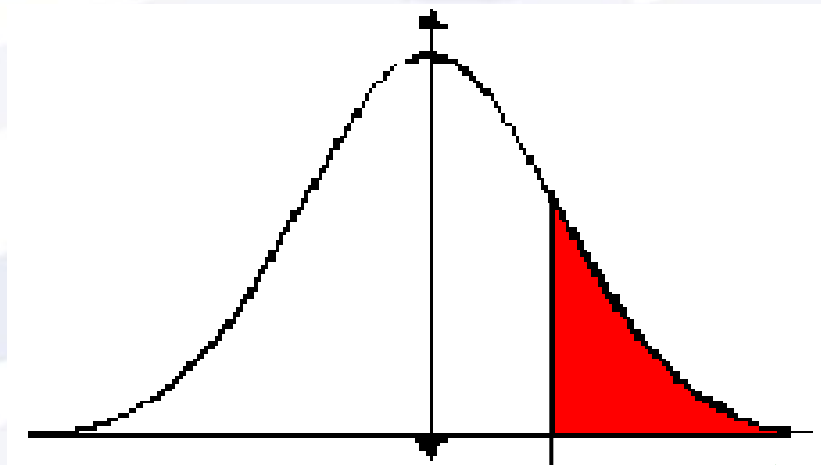
Effective Progeny Records

To increase the effective records from your flock you could:

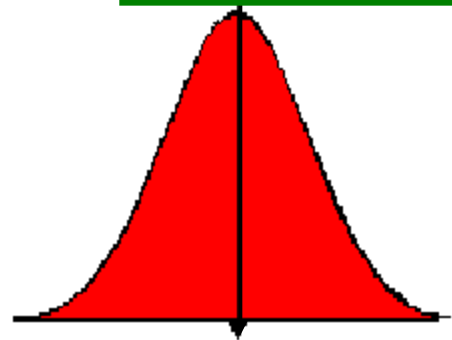
- collect increased pedigree information
- increase the number of progeny per sire
- ensure there are multiple sires represented in the group
- have equal numbers of progeny per sire in each management group
- maximise the number of sires that have progeny in each management group.

Submitting selected data

Average = 45kg



+ 6 kg



Average = 49kg

+ 2 kg

Recording Culls or Commercial

Sheep identified as 'culls' (CU) or 'commercial' (CO) before the first trait is submitted will not attract a SHEEP GENETICS service fee.

While these records will be used in the SHEEP GENETICS analysis to calculate breeding values, the ASBVs will not be reported.

The CU and CO codes can be recorded in the 1st two digits of the sheep number section of the ID (last 6 digits of the ID) or in a 'Cull' field in the dataset.

Eg. 199999-2009-CU0001

Later Traits

- Yearling/Hogget/Adult traits are more at risk of poor data structure due to;
 - Small groups as groups change over time
 - Culling decisions biasing the recording of sires progeny
- Particular issues are;
 - hogget and adult weights when ewes are being joined as lambs
 - Classing prior to joining and collecting repro data

Avg daughters / sire (joined @ 1 year)

Row Labels	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	Grand Total
1	2.8	2.6	2.3	3.4	3.4	3.7	2.8	3.3	2.7	4.4	3.2
Flock 1					6.0					2.4	4.2
Flock 2	1.5				1.0	2.0					1.5
Flock 3						1.0					1.0
Flock 4		1.5	5.0	6.0	2.0	1.0					3.1
Flock 5	2.9	2.6	1.0								2.2
Flock 6				2.8							2.8
Flock 7	2.3	1.3		3.3	2.6	5.8	3.9	4.7	5.2	10.2	4.4
Flock 8	2.0	6.2	1.6	3.9	1.9	5.2	3.8	2.5	2.2	1.5	3.0
Flock 9							2.0		1.0		1.5
Flock 10	3.5	2.4	3.2	4.8	2.7	1.5	2.7	5.3	5.1	5.5	3.7
Flock 11				1.4		6.3					3.0
Flock 12	6.0			5.0	2.0		2.0	3.0	1.5	1.0	2.9
Flock 13	3.0	1.5	2.0	3.2	1.5	4.5	1.0	1.4			2.3
Flock 14				4.0		5.2					4.6
Flock 15				1.0	9.7	8.0	5.0			6.0	5.9
Flock 16	1.0		1.0	4.3	4.6	1.7	1.8	3.0	1.8		2.3

Avg daughters / sire (joined @ 2 years)

Row Labels	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	Grand Total
1	2.8	2.6	2.3	3.4	3.4	3.7	2.8	3.3	2.7	4.4	3.2
2	8.0	9.9	11.7	13.8	12.6	11.4	12.4	7.9	12.3	1.0	10.9
Flock 1	4.0	1.0	10.5	15.8	28.7	12.0	10.5	6.1	13.9		11.8
Flock 2	3.7	4.7	5.0	1.8	4.9	2.3	1.7	2.0	7.5		3.3
Flock 3	7.1	15.8	8.2	12.3	11.8	13.4	16.7	5.5	14.5		10.6
Flock 4	9.0	22.0	27.8	33.3	12.9	15.3	13.4	10.9			18.1
Flock 5	10.1	11.7	5.9	13.5	13.7	13.9	14.5	10.5	15.1		11.5
Flock 6	8.2	12.0	16.4	13.5	24.4	11.7	22.1	6.7			13.5
Flock 7	10.6	6.5	12.3	14.8	11.0	18.5	13.9	12.4	16.0		12.2
Flock 8	7.5	8.1	3.3	8.5	9.6	7.8	6.7	2.9	4.5		5.6
Flock 9	22.0	9.6	15.2	21.3	17.7	14.0	19.4	13.1	16.0		16.5
Flock 10	5.2	4.4	5.8	8.5	6.3	5.4	9.5	10.8	12.1		7.6
Flock 11					17.0	17.0	10.3	25.3	10.5		16.0
Flock 12	5.1	8.0	4.0	7.9	17.6	8.5	6.4	2.2	3.3		6.9
Flock 13					12.0	15.0	11.9	10.5			12.3
Flock 14	13.3	13.0	14.7	21.7	5.6	11.2	17.0	9.8	16.8		14.0
Flock 15	13.5	10.0	8.1	7.0	9.5	5.0	5.1	4.7			7.9
Flock 16	7.5	17.8	30.8	24.5	12.2	28.8	26.1	25.0	44.0	1.0	19.9
Flock 17	8.9	7.6	8.1	9.6	9.4	7.6	5.8	8.3			8.1
Flock 18	4.7	11.2	9.1	15.4	15.5	15.2	15.5	8.5	7.5		9.5
Flock 19	5.6	5.7	7.2	9.7	6.1	2.7	4.4	5.3			5.5

Data quality

- **Accurate pedigree**
 - Sire (% of flock)
 - Dam
 - Date of birth (Bulk date vs week of birth)
(AI vs natural)
- **Whole flock recording**
 - Selective recording (excessive culling) may lead to severe biasing of ASBVs
- **Rams for maiden ewes**
 - OVIS adjusts for ewe age but it is recommended that rams used on maidens also be used over some mature ewes

Linkage

Genetic **linkage** occurs when two or more flocks share common genes.

Genetic **linkage** allows the direct comparison of animals across flocks and is essential for the calculation of ASBVs.

Genetic **linkage** is required for comparisons:

- across management groups
- across years within flocks
- across flocks within breeds
- across breeds

Linkage

Linkage is assessed every run for the five trait groups

- Reproduction
- Growth
- Fleece
- Carcase
- WEC

Linkage

To create genetic **linkage**:

- Use common sires across flocks
- Use common (link) sires across years within flocks
- Purchase new sires (or semen) from other flocks participating in Sheep Genetics
- Merino Superior Sires

Need at least :

- 30 progeny from a link sire
- 90 progeny from sons of a link sire
- 1 link sire per 10 sires joined (including syndicates)

Data quality

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