NSIP Workshop

Sam Gill
Sheep Genetics

- National genetic evaluation program for sheep in Australia
  - Lamb production
  - Wool production

- Launched on November 2005
  - Common genetic language
  - Merging of several Merino databases
  - Research and development resource
GIENNA Superfine Merinos

• 1980’s - Starting breeding rams for own use
• 2000 – Registered flock, started selling rams
• 2002 – EBVs (Merino Validation Project)
• 2005 – ASBVs (Launch of MERINOSELECT)
Sheep Genetics products

• **LAMBPLAN**
  – Terminal sire (483 flocks)
    • Across flock since 1995
    • Across breed since 2001
  – Maternal (112 flocks)
    • Across flock since 1995

• **MERINOSELECT**
  – across flock Merino only (174 flocks)

• **Other analyses**
  – NSIP - US sheep analysis (134 flocks)
  – Australian Dohne Breeders Association (83 flocks)
  – Kidplan (Aus. Goat analysis)
LAMBPLAN – Terminal Breeds

<table>
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<tr>
<th>BREED</th>
<th>ANIMALS / YEAR</th>
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<td>COOLALEE</td>
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</table>
Response in $ per ewe per year

- Border Leicester
- Coopworth
- Merino
- Terminals

Year of birth

Response ($ per ewe)

- 0
- 5
- 10
- 15
- 1990
- 1995
- 2000
- 2005

Year of birth

Response ($ per ewe)
Reported Index Trends

• **LAMBPLAN**
  – TERMINAL
    • *Carcase Plus* *(desired gains)*
      • Increased growth, eye muscle depth, reduced fat
  – BORDER LEICESTER
    • *Maternal $* *(\$ index)*
      • Increased growth, reproduction, eye muscle depth

• **MERINOSELECT**
  • *Merino 7%* *(standardised \$ index)*
    • Increased fleece weight, growth, lower fibre diameter
Comparing Indexes – SD units

Breeding Objective Std Dev

Progeny Year of Birth

Carcase Plus

Mat$

M7
Comparing Indexes – Accuracy

Average Index Accuracy (%)

Progeny Year of Birth

Carcase Plus
Mat$
M7
One young ram = low accuracy
A team of young rams = high accuracy
Potential Topics

- Recording
- Data management
  - Software
  - Importing files into Pedigree Wizard
  - Windows 7 64bit
  - Sending to LAMBPLAN
- Accuracy
- Groups (selective recording)
Pedigree Wizard help
Windows 7 (64bit) alternatives

• Pedigree Master
  – under development

• Make your own file
  – Needs to be in the correct format
  – good knowledge of Excel
  – Needs validation or be prepared for ‘robust’ feedback

• Microsoft Virtual Machine
  – You will need to set-up email and printers again

• StockBook freeware
  – Just released and also available
Help Topics

1. Exporting data files and/or Export information for other reporting
2. Delete / Remove an animal
3. Replace or change a sire that is incorrect
4. Setting and using the function key shortcuts
5. Display graphs for group data representation
6. Graph a selected EBV trait results across years
7. Update and add pedigree from the EBV results file supplied by LAMBPLAN
8. Find animals by Dam ID or Dam Lookup
9. How to create and email a PW backup
10. How to RESTORE from a previous backup
11. Retagging an animal
12. Quick Locate window
13. Quick Add auto IDs
14. EBV Warehouse

Simple summary of what’s checked in PW validation procedure
General data import/export information
Download

please note :: Pedigree Wizard will not run under 64 bit Windows
(any 32 bit version of Windows 98, 2000, ME, XP, Vista or Windows7 should be fine)

Please .. always create a new backup before installing new/updated version of PW

Version 4.22-MLA - Apr 2011  Download
Minor updates to some reports
Replace/updated image render DLL in reporting program

Version 4.18-MLA - Dec 2010
Minor updates to some reports

Update reports .. mainly dates

Version 4.13-MLA - June 2010
Update database ->Staple Length field ..

Version 4.12-MLA - May 2010
Update Pedigree printouts

Version 4.11-MLA - Apr 2010
Update reports

Version 4.10-MLA - Feb 2010
Added procedure to open and check all database files on program start for valid access
Importing data into Pedigree Wizard
Steps for importing data

1. Format the file in Excel
2. Copy all the data from Excel
3. Paste into a Notepad (.txt) file
4. Save the file in Pedigree Wizard directory
   – C:\lambplan\pw4
5. Open Pedigree Wizard
6. From the top menu,
   – open Text Importing and follow the steps
   – Top menu > Utilities > Text Importing
Formatting data in Excel

1. Match up column headings
   - Micron = YFD; CV% = YFDCV; Curvature = YCURV
   - *Top menu > Data browsers > Yearling information*

2. Make sure that tag numbers are in right format
   - Can use last 6 digits if all animals are in the same birth year

3. No ‘empty’ cells / missing values
   - Populate missing values with a ‘*’

4. Make sure groups and date have been included
   - Ie YGRP and YDDMM
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Steps for importing data

1. Format the file in Excel
2. Copy all the data from Excel
3. Paste into a Notepad (.txt) file
4. Save the file in Pedigree Wizard directory
   - C:\lambplan\pedigreewizard
5. Open Pedigree Wizard
6. From the top menu,
   - open Text Importing and follow the steps
     - Top menu > Utilities > Text Importing
Import data
Text file importing

- Select File
  Select text file to import from

- Edit File
  Opens selected import file in notepad for editing

- Import
  Import text file into temp database

- Browse
  Browse temp database

- Update
  Update temp database to Pedigree Wizard DATABASE

- Undo
  Restore database file to start condition

Close
Steps for importing data

1. Format the file in Excel
2. Copy all the data from Excel
3. Paste into a Notepad (.txt) file
4. Save the file in Pedigree Wizard directory
   – C:\lambplan\pedigreewizard
5. Open Pedigree Wizard
6. From the top menu,
   – open Text Importing and follow the steps
   – Top menu > Utilities > Text Importing

7. Also available on EweTube (YouTube)
   – http://www.youtube.com/watch?v=mTtO7ul0WFM
Measurements
Animal Identification and Pedigree

- animal identification (16-digit)
- sire pedigree
- dam pedigree
- date of birth
- birth/rearing status
# Sheep Identity Records

16-digit unique animal identification

<table>
<thead>
<tr>
<th>Breed</th>
<th>Flock</th>
<th>YOB</th>
<th>Tag Number</th>
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<tr>
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</table>
Weights

Body weighing can be done from birth to adult age

Body weight should be recorded to nearest 0.5 kg
(birth weight to nearest 0.1 kg)

Body weighing is done at scanning

• Keep off feed for ~3 hours before weighing
• Some issues with early age weights and bulk date of birth
Fleece Traits

Fleece weighing
- Average min 10 months of age
- Average min 6 months wool growth
  - Tip shearing / bulk date of birth

Wool quality samples
- e.g. fibre diameter, CVFD, SL, SS, curv, yield
- Average min 10 months of age
- Average min 5 months wool growth
  - Use an OFFM QA accredited operator
Fat and Eye Muscle Depth

C Fat and eye muscle depth (EMD) must be measured by an accredited ultrasound scanner.

Recommended group average:
- males average 45-60 kg
- Must be >30kg
- at least 2-3 mm of measured fat at the C site

Scanners also provide body weights and can measure scrotal circumference.
GR Fat and Eye Muscle Depth

Scan is done at the C-site (ASBV is for GR Fat & EMD) (45 mm from the midline at the 12/13 rib)
GR tissue depth is the fat grading in Australia
GR site 110 mm out from the backbone at the 12/13 rib
Worm Egg Counts

Time of measurement varies between regions

**Summer rainfall areas**
Measure young sheep at least six weeks after weaning
Measure WEC between six and 14 months of age

**Must have > 300 epg to be useful**
Too many false ‘0’ values

Highly recommended that a flock health specialist monitor the program
Sending Data to LAMBPLAN
What information does Sheep Genetics use?

Performance
  • Live weights
  • Fleece tests
  • Carcase scans
  • WEC

Pedigree
  • Sire
  • Dam

Management
  • Management groups
Data from breeder or service provider → Sheep Genetics Holding Database → Flock Reports → Sheep Genetics Master Database → OVIS analysis

Data validation and integrity checks

Web based query and reporting tools

ELITES Sire reference data Trait leader
How to organise your Sheep Genetics information

• Recommended
  – use a commercial flock recording package, or
  – use a data manager to collate your records

• Alternative
  – Create a correctly structured text file
Using on-farm software

- COMPATIBLE WITH Sheep Genetics
- Commercial software packages
- Other available software

Consider:
- Ease of use
- Importing information from other sources
- Compatibility with new technologies
- What information can be reported
- Will it be used in the office or beside the classing race
- Cost & availability of on-going support & training
File contents

- Entire flock / drop must be submitted as a unit (or entire flock covering all years).
- Ensures management group structure is always consistent
- Flock / drop information only replaced when more records are received
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

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)
Comparing Rams Across Property

Live Weight of Progeny

A

45

B

- 3kg

C

+ 5kg

35

A

B

Property

C

+ 1kg
Comparing Rams Across Property

Benchmark

+ 1kg

- 3kg

+ 5kg
Syndicates
Syndicates

Progeny born from *syndicate* matings can be submitted to Sheep Gentic's

A flock with *only* syndicate matings will receive *FBVs*, as syndicate matings do not allow for linkage.

Note: Syndicate data is not as accurate as pedigree data
Submitting Syndicate Data

1. Known ram syndicates (NAM)
   e.g. 50-4967-2005-NAM005
   *Submit IDs of rams in syndicate*

2. Half sib syndicates (SIB)
   e.g. 50-4967-2005-SIB002
   *Submit ID of sire of syndicate*

3. Unknown sire syndicates (SYN)
   e.g. 50-4967-2005-SYN007

Note: Year of drop of sires should be year of drop of progeny minus one.
Management Groups
Management Groups

- Management groups identify animals that have equal opportunity to express their potential

- Breeder defined management groups
  - Birth weight – paddock effects
  - Weaning weight – paddock effects
  - Post weaning management group
  - Sickness
  - Orphan / fostered lambs
  - Show & sale teams
  - Time off feed
Different Management Groups

Compare apples with apples

Size matters: Corriedale breeder Nick Cole with a pellet-fed lamb (left) and Ian Macpherson with a pasture-fed lamb.
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
Selective recording
Submitting selected data

Average = 45kg

Average = 49kg

+ 2 kg

+ 6 kg
Accuracy
ASBV Accuracy

Accuracy is a reflection of the amount of effective information that is available to calculate an animals’ breeding values.

Accuracy does not account for:
- quality of management group definition
- genetic linkage
Relative contribution to a breeding value

- 0%
- 10%
- 20%
- 30%
- 40%
- 50%
- 60%
- 70%
- 80%
- 90%
- 100%

Breeding Value Accuracy (%)

- Progeny
- Half Sibs
- Animal
- Parents

- Own
- Own, parents, 15 ½ Sibs
- Own, parents, 15 ½ sibs, 200 progeny

Fibre Diameter (60%)

Staple Strength (30%)

One young ram = low accuracy
A team of young rams = high accuracy
Accuracy vs Effective Progeny

Accuracy

No of Effective Progeny

YWT
YWT (+ 14 half-sibs)
Where NLW records come from

- MID PARENT
- MP + WT/SC
- OWN RECORD + 30 HALF SIBS
- OWN RECORD + 80 HALF SIBS
- + 2 LAMBS
- + 6 LAMBS

Legend:
- OWN
- DAM
- SIRE
- SIBS
- PROG
- CORRELATED
Range of changes
to sire NLW pre/post model updates

Before Feb 2009  After Feb 2009
## Standard error of ASBVs

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