

AWI Breech Strike R&D Technical Update
Maritime Museum, Sydney
20th August 2014

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AWI

Key Messages & RDE Priorities

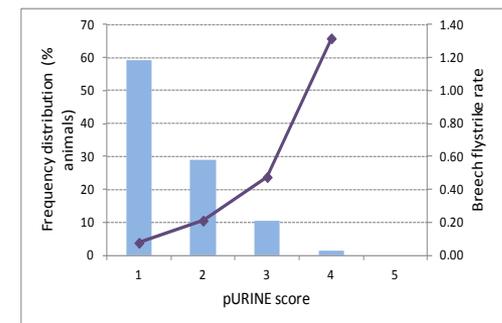
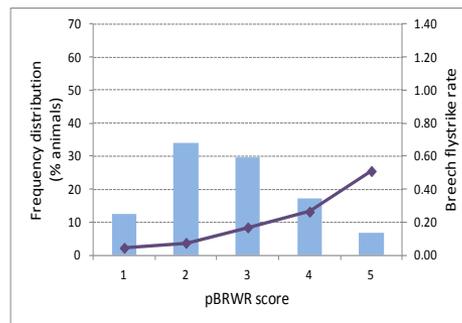
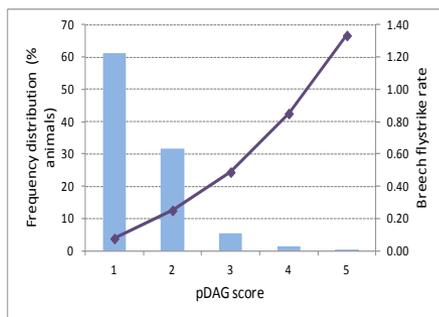
Key Messages

Breecch Strike Prevention



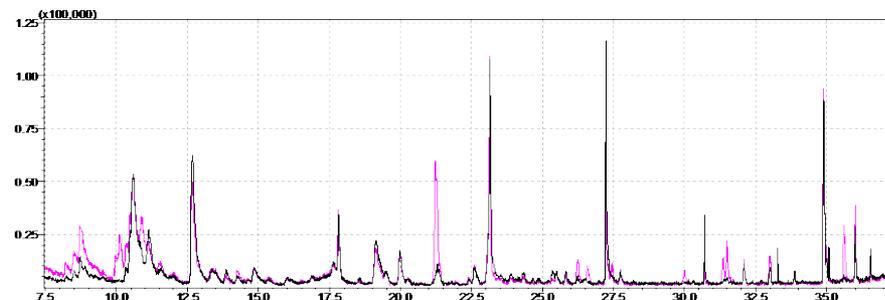
Key Messages: Breeding for Breech Strike Resistance

- Breech Strike highly repeatable and heritable, cull struck sheep
- Strong relationship between breech trait scores & breech strike; each 0.1 score reduction reduces risk
- Key targets for indicator scores are: **2:2:3**
 - Wrinkle Score 2; Dag Score 2 & Breech Cover Score 3 (risk similar to 'mulesed')
 - Achieve by sheep selection, mulesing, management or breech modification
 - Above 2:2:3, risk of breech strike increases rapidly,
 - Below 2:2:3, risk of breech strike continues to decrease
 - Collecting more data on urine stain – likely to need score 2



Key Messages: Breeding for Breech Strike Resistance

- Wrinkle and Cover – ‘relatively’ quick progress can be made in **breeding terms..** less so for super fines / fines
- Reducing dags is more difficult in high dag country, environmental causes of dags swamps genetic progress
- Odour and bacteria may be important factors but will be some time before validated and usable by Industry
 - May take some pressure off the need for low dag, low urine stain and low wrinkle?



Key Messages: Breeding for Breech Strike Resistance

- Need to find & use high fleece weight, low dag & low wrinkle sheep
 - More difficult in superfine and fine wool merinos; less variation
- Breeding Values can assist rate of gain especially when there are
 - a) large numbers of traits to select for
 - b) reasonable number of traits negatively correlated
 - Fleece Weight and Micron
 - Fleece Weight and Wrinkle
 - Fat and Productivity (Fleece Weight and Reproduction)
 - Worm Egg Count and Dags
- It takes focus, group of fellow breeders on same path and time.... to breed “curve benders”



Key Messages: Breeding for Breech Strike Resistance

Ram Breeding Industry is now “creating” new lines of low wrinkle, low cover, low dag rams with high relatively fleece weight.



<u>AWT</u>	<u>YFAT</u>	<u>YEMD</u>	<u>AGFW</u>	<u>AFD</u>	<u>ACUR</u>	<u>ASS</u>	<u>YWEC</u>	<u>NLW</u>	<u>EBWR</u>	<u>EBCOV</u>	<u>LDAG</u>	<u>FP+</u>	<u>MP+</u> ↓	<u>DP+</u>
11.3 96%	0.8 94%	2.3 95%	16.0 97%	-0.6 97%	-3.0 97%	7.3 90%	-13 88%	10% 80%	-0.8 97%	-1.5 96%	-0.1 86%	163 86%	188 85%	213 81%
9.1 87%	0.1 84%	0.9 88%	11.4 87%	-1.3 90%	-4.7 89%	7.9 74%	2 75%	7% 51%	-0.4 88%	-0.9 89%	-0.1 48%	163 65%	179 62%	189 58%
3.6 86%	0.3 82%	0.9 86%	17.4 86%	-1.1 89%	-8.5 89%	4.3 75%	-6 74%	7% 52%	-0.4 91%	-0.7 88%	-0.2 56%	162 65%	178 62%	187 58%
5.2 83%	0.4 61%	1.1 69%	13.8 79%	-0.4 87%	-3.2 88%	4.5 80%	-26 55%	6% 34%	-0.7 86%	-0.5 82%	-0.2 62%	153 62%	172 56%	183 46%
6.9 87%	1.2 83%	1.5 87%	-0.4 85%	-2.0 90%	0.7 89%	4.1 73%	-14 55%	14% 47%	-0.3 93%	-0.8 91%	-	154 62%	168 59%	188 55%
6.3 92%	0.5 83%	1.3 90%	13.9 86%	-0.9 91%	-1.1 91%	2.0 86%	18 81%	-3% 47%	-0.6 97%	-0.4 96%	-0.1 91%	141 71%	161 65%	165 56%
7.6 76%	0.1 56%	0.8 64%	3.0 68%	-0.5 75%	-2.7 75%	4.0 63%	-82 69%	15% 30%	-0.3 82%	-0.3 87%	-0.1 71%	148 47%	158 44%	175 39%
5.5 91%	0.7 85%	1.2 89%	9.1 86%	-0.7 91%	-1.2 91%	0.2 74%	-49 76%	6% 70%	-0.4 96%	-0.3 91%	-0.1 41%	143 74%	157 75%	173 72%
7.5 86%	1.4 81%	1.8 85%	-2.0 85%	-1.0 89%	-2.1 88%	7.8 73%	-41 55%	15% 46%	-0.3 91%	-0.6 88%	-	146 62%	157 59%	181 54%
6.6 81%	0.6 55%	1.1 60%	10.9 75%	-1.4 80%	-1.3 76%	4.7 67%	12 46%	4% 39%	-0.5 74%	-1.2 67%	-0.1 37%	147 52%	155 50%	163 46%

Key Messages: Breech Modification - alternatives

- **Clips:**

- Approx 30,000 to 50,000 lambs per year
- Mostly reusing clips each year



- **SkinTraction:**

- Negotiating label for APVMA approval
- Development and Commercialisation



- **Liquid Nitrogen:**

- Improving equipment and process
- Commence larger trials



- **Laser Technology:**

- Reviewing new technology and need for further proof of concept studies



Encouraging welfare assessments to date for all alternatives

Key Messages: Breech Modification – Pain Relief

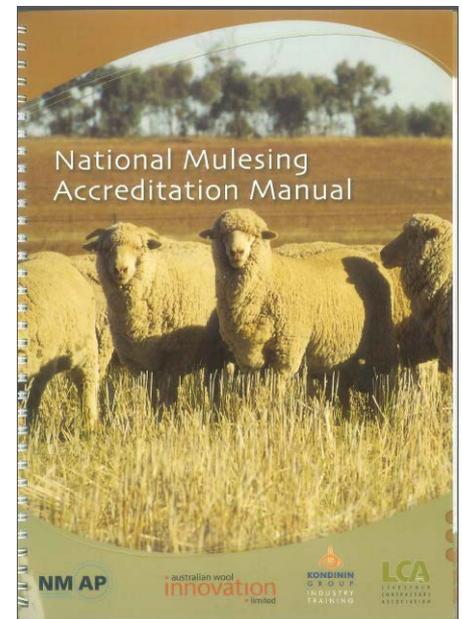
- **Tri-Solfen**

- Survey results; 60% to 70% of mulesed lambs treated Tri-Solfen, rapid uptake
- Reclassified from S4 to S5 category chemical, over the counter sales started

- **NMAP Training**

- Being updated by Animal Health Australia and WoolProducers Australia
- Newly endorsed under the Australian Qualifications Framework (AQF) system
- Opens access to Government Industry Training Funds
- Can be used as part of Certificate 3 and 4 in Agriculture
- Train The Trainer “training” late 2014
- Aim to recommence NMPA training early 2015

- Kondinin updating existing training records and approvals



Key Messages: Sheep Management

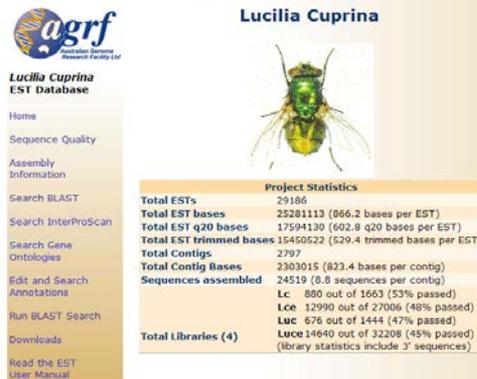
- Improved pastures and high stocking rates have increased risk of breech strike over last 50 years
- Tail docking methods similar for strike risk and welfare
- Castration methods similar for strike risk and welfare
- Dicyclanil and Cyromazine provide good protection for label periods listed on product labels
- Use existing chemicals wisely to delay onset of resistance

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Key Messages: Sheep Management

- Harder to get new chemicals registered, costs much higher
 - Worms and flies
- Improving our understanding how current chemicals work at DNA level. Targeting genes specific to parasite good way forward.
- DNA of pest, host, bacteria and their interaction with Environment providing new leads



The screenshot displays the 'Lucilia Cuprina EST Database' website. On the left is a navigation menu with links: Home, Sequence Quality, Assembly Information, Search BLAST, Search InterProScan, Search Gene Ontologies, Edit and Search Annotations, Run BLAST Search, Downloads, and Read the EST User Manual. The main content area features a central image of a green fly (Lucilia Cuprina) and a 'Project Statistics' table.

Project Statistics	
Total ESTs	29186
Total EST bases	25281113 (866.2 bases per EST)
Total EST q20 bases	17594130 (602.8 q20 bases per EST)
Total EST trimmed bases	15450522 (529.4 trimmed bases per EST)
Total Contigs	2797
Total Contig Bases	2303015 (823.4 bases per contig)
Sequences assembled	24519 (8.8 sequences per contig)
LC	880 out of 1663 (53% passed)
LcE	12990 out of 27006 (48% passed)
LcC	676 out of 1444 (47% passed)
LcCE	14640 out of 32208 (45% passed) (library statistics include 3' sequences)
Total Libraries (4)	

Key Messages: Grower case studies unmulesed

- Plan, plan, plan, don't just stop mulesing
 - need to rebalance basket of all other control procedures
- Work in with other like minded breeders
- Need clear focus on a balanced profitable merino and how to achieve it; set breeding targets
- Need to manage both upsides and downsides of introducing genetics
- MUST proactively market sheep and wool
- Whole business needs to be on board



Future RD&E Options and Priorities?



Future RD&E priorities - Breeding

- **Odour and Bacteria**
 - Validating early results
 - Which odours attract or repel flies?
 - Role of moisture in creating high risk conditions
 - Will odour take pressure off wrinkle, dag, breech cover, urine stain?
- **Urine stain**
 - What causes some sheep to get urine stain and others not?
 - More data to create breeding value
- **Flystrike Trials?**
 - Progeny testing under challenging conditions
 - Comparison of breeding and modification alternatives?



Future RD&E priorities - Breeding

- Improving rates of gain, wrinkle, dag, cover, productivity
 - Upgrades to DashBoard (assess rate of gain) and Matesel (joining strategy)
 - Making ASBV technology more accessible, reducing adoption barriers
- Correlation between Dags and Faecal Consistency
 - Sheep CRC Information Nucleus Flock analysis encouraging
 - Review Mt Barker WA Flock data
 - Good correlation would allow selection against dags in low dag environments
- Dags
 - Reducing dags; mostly hypersensitivity, gut reaction to low but increasing larvae
 - Genomic options?
 - Improving adult worm control



Future RD&E priorities - Breeding

- **Breeding Value for Flystrike / Welfare?**
 - Review post odour and bacteria R&D
- **Sheep Genomics? Risk and Return**
 - Genomics, discipline with very rapid progress, but low return on investment?
 - Where to with flystrike!!
 - Further sampling/storage of Breech Strike Resistance Flocks
 - Review analysis methodology, combine with Sheep CRC and MLA data
 - Commercial flock testing?
- **Modelling of achievable rates of welfare and productivity improvements from sheep selection and breeding program technologies**



Future RD&E priorities - Management

- Fly genome offering new sights into new chemicals / vaccines / prevention regimes
- What do the genes unique to the blowfly control
- Smell or 'olfactory' genes of special interest, how best to knock out or confuse?
- Cost benefit of 6 month or 9 month shearing programs
- Improved castration and tail docking methods



Future RD&E priorities – Breech Modification

- SkinTraction to market
- Further Liquid Nitrogen Trials
- Laser further “proof of concept” studies - new technology?
- Comparative efficacy and welfare assessments of alternatives and pain relief options
- Publication of results



Future RD&E priorities – Pain relief

- Setting Maximum Residue Levels for Pain Relief Actives
 - Funding needed for off patent actives, funding negotiations taking place
 - Meloxicam
 - Lignocaine
 - Bupivacaine
 - Cetrimide
 - Hopefully MRLs for sheep can be set next 1-2 years
With Holding Periods then likely to be less than 14 days??
 - MRLs & WHPs will give whole supply chain more confidence and uses

An LPA NVD is a vital part of your business - make sure it is complete and correct

Who is responsible for completing the LPA NVD?

Part A: The sheep or lambs owner or the person responsible for the husbandry of the sheep or lambs.

Part B: The livestock carrier.

Part C: The livestock agent (optional).

Who keeps the copies?

Top sheet: (White) goes with the sheep/lambs to the purchaser.

Middle sheet: (Green) goes to the carrier.

Bottom sheet: (Pink) stays in the book and should be kept for auditing purposes.

How do I order copies of the LPA NVD

1 Go to www.mla.com.au/lqs or

2 Phone 1800 683 111

Where do I go for more information?

Go to www.mla.com.au/lqs

IF PIC IS PRE-PRINTED DO NOT CROSS OUT.

List in the Description Table in Part A all PIC numbers (other than the PIC printed) on tags of sheep or lambs in this consignment.

Write the name of the person or business (and their address) that the sheep/lambs have been transferred to.

Write the address of where the sheep/lambs will be delivered (if different).

Do not send sheep/lambs to slaughter if they are still within the withholding period or export slaughter interval.

NATIONAL VENDOR DECLARATION (SHEEP AND LAMBS) AND WAYBILL 50708

Part A: Completed by the owner or person who is responsible for the husbandry of the sheep or lambs.

Owner of sheep or lambs: Beela Smith J&S Smith

Property/place where the sheep or lambs were consigned: Wynagle VIC

Property Identification Code (PIC) of the property: 3 A B C D E F

Number	Year born	Description (breed, sex, etc.)	Marking	Tag No. on Ear	Brand	Classified
50	2000	Cross bred lambs	09/09/04			

Consigned to: John Sumner, Bureau Livestock Agency VIC

133 Reply to: Beela VIC

Destination (if different): Beela Balyerna, Bealla, VIC

Details of other stations: _____

Have these sheep or lambs been raised consistent with the rules of an independently audited QA program on the property the PIC of which is shown above?

Yes No If Yes, give details: 1, 2, 3, 4, 5, 6

Have all the sheep or lambs in this consignment been treated with a Scabby Mouth Vaccination either at marking or at least 14 days prior to their presentation for sale?

Yes No

Has the owner stated above owned these sheep or lambs since their births?

Yes No If No, how long ago were the sheep or lambs obtained or purchased? (NVD) (Other list in the Declaration Table in Part A all PIC numbers other than the PIC printed above on export sheep or lambs or on export of sheep or lambs with a PM and Brand, apply to year 14.)

A. Less than 2 months B. 2-6 months C. 6-12 months D. more than 12 months

Are any of the sheep or lambs in this consignment still within a Withholding Period (WHP) or Export Slaughter Interval (ESI) following treatment with any veterinary drug or chemical?

Yes No If Yes, give details: (Record additional details in question 7)

Use the tools provided in the LPA program to help you answer Part A with confidence.

Once you have correctly completed and signed this form you have met the requirement to have a livestock travel document* and declared that all livestock covered by the LPA NVD have met the LPA program requirements and animal material feeding restrictions.

The carrier should fill in Part B.

The agent may fill in Part C.

A national breach strike R&D technical update 20th August 2014

The LPA NVD is your guarantee to buyers - get it right.

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Future RD&E priorities – Pain relief

- Ongoing R&D; pre and post operative options
- Practical Delivery methods
- Better drug combinations
- Longer acting products
- Better accounting for the benefits of pain relief
- Establishing better pain benchmarks



Future RD&E priorities – Extension

The R&D of Extension, how to lift engagement & adoption

- The best RD&E has strong breeder involvement
 - At the start, planning
 - In the middle, overseeing
 - At end, marketing the outcomes
- Producer Demonstration Sites; see and touch
- Field Days, Sales, Grower Events
- ParaBoss (FlyBoss, WormBoss, LiceBoss)
- AWI Networks, Breeder groups
- Publications
- Case Studies
- Industry Champions
- Greater use of digital media options, Apps



Future RD&E priorities – Consultation

- 6 monthly Australian Veterinary Assn and annual Genetic Review of AWI Breech strike prevention program
- AWI Animal Welfare Forum continues to meet every 6 months
- Consultation with State Welfare and Federal Agencies
- Technical RD&E Update every 2 years
- Feedback and Consultation with Supply Chain Customers and Retailer Associations
- Ongoing breeder feedback - Breech Strike RD&E Strategy is updated each year





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