

2018 BREECH FLYSTRIKE RD&E TECHNICAL UPDATE

Summary of Day

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BREECH FLYSTRIKE STRATEGY 2017/18 – 2021/22

THE FIVE KEY PILLARS OF AWI INVESTMENT

The Breech Flystrike Strategy provides direction for AWI investment in sound, scientific solutions for the management of breech flystrike to improve lifetime animal welfare, address supply chain expectations and increase the demand for Australian wool.

BREEDING AND SELECTION

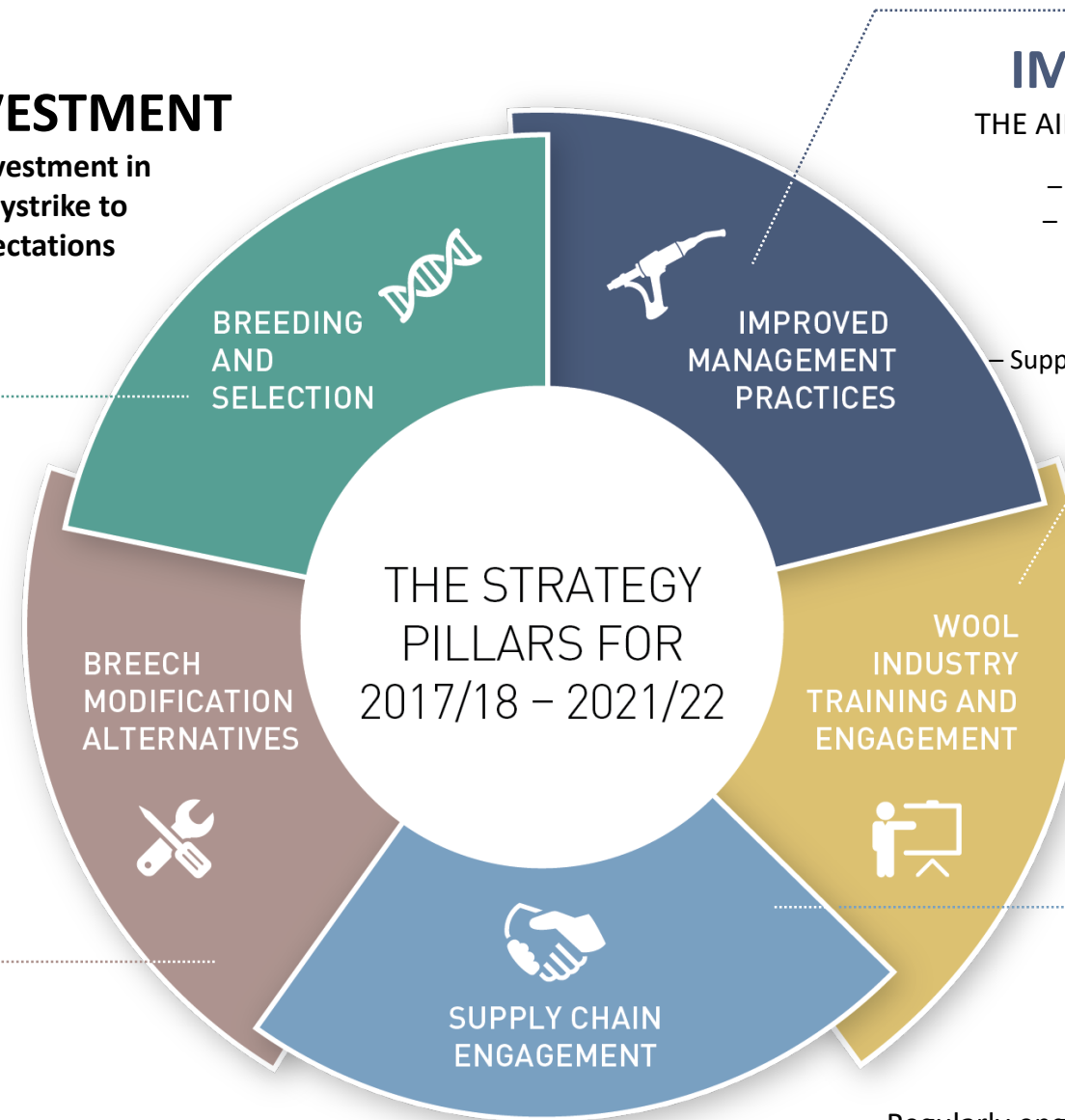
THE AIM: Long term sustainable solutions to reduce the risk of breech flystrike.

- Understand the performance and economic consequences of breeding for reduced breech flystrike.
- Investigate the, as yet unknown, factors that cause breech flystrike.
- Improve the accuracy and robustness of breech flystrike traits along with other welfare traits such as worm resistance and survival.
- Better understand how to reduce the incidence of dags and urine stain through breeding.

BREECH MODIFICATION ALTERNATIVES

THE AIM: Breech modification alternatives to reduce the reliance on mulesing.

- Undertake further R&D to refine the application protocols for breech modification alternatives to support their commercial viability.



IMPROVED MANAGEMENT PRACTICES

THE AIM: Improved management practices to advance lifetime welfare.

- Invest in getting new parasite control treatments and vaccines to market.
- Ensure access to information on parasite management and use of existing chemical treatments.
- Investigate longer acting, cost effective pain relief options for painful husbandry practices.
- Support for further National Mulesing Accreditation Program (NMAP) training.

WOOL INDUSTRY TRAINING AND ENGAGEMENT

THE AIM: Adoption of best practice strategies to improve the lifetime welfare of sheep and reduce reliance on mulesing.

- Develop and implement education, training and extension strategies to improve lifetime welfare of sheep and reduce reliance on mulesing.
- Monitor, evaluate and improve the success of education, training and extension strategies.
- Engage with woolgrower advisors on the RD&E program.

SUPPLY CHAIN ENGAGEMENT

THE AIM: International and domestic stakeholders support the Australian wool industry.

- Regularly engage with domestic and international stakeholders to ensure they understand best practice management of breech flystrike and associated welfare implications.
- Minimise the risk of regulatory measures that may restrict the ability of woolgrowers to select the most appropriate practices for their farming system.
- Consult with Australian wool and sheep industry organisations.

Annual Cost of Flystrike for Producers

	\$ Million
Treatment	11.34
Prevention	57.30
Production Losses	104.53
TOTAL COST	173.17

Lane J, Jubb T, Shephard R, Webb-Ware J, and Fordyce G (2015). Priority list of endemic diseases for the red meat industries B.AHE.0010. Report prepared for Meat & Livestock Australia, Sydney.

AWI Investment in Breech Flystrike RD&E

	\$ Million	Percentage Spend
Breeding and Selection	8.4	27%
Improved Management Practices	10.6	34%
Breech Modification Alternatives	12.2	39%
TOTAL SPEND 2001 - 2017	31.2	100

Plus all the \$\$ spent by research organisations, universities, state departments, animal health companies, service providers, individual growers etc...

Sheep Health & Welfare Program Budget increase in 2018/19 to \$3,500,000

What do we know?

	2013/2014 AWI MLA Wool and Lamb Forecasting Survey	2017 AWI Animal Husbandry Survey
Percentage of merino lambs mulesed	73%	70%
Percentage of mulesed merino lambs receiving pain relief	77%	85%
Size of mules		50% of growers declared they they reduced the size of their mules in the last 10 years

The number of Merinos being mulesed is decreasing and there has been large and rapid adoption of pain relief

Breeding and Selection

Long term sustainable solutions to reduce the risk of breech flystrike

What do we know?

- It's possible to breed for increased productivity and reduced susceptibility to breech flystrike.
- Medium type Merinos are showing impressive gains for improved breech traits
- Limited suitable rams available to impact breech traits in Fines/Super Fines.

How do we help growers breed balanced profitable Merino for their specific environment?

- Find unexplained factors, to reduce emphasis on wrinkle and dags
- Increase number of animals assessed for breech traits
- Promote of high fleece weight, low breech trait sires
- Welfare enhanced selection indexes
- Genomic selection?

A blue rectangular box containing the text 'Review of Breech Flystrike Risk Factors'. A blue arrow points from the top-left corner of the box to the text 'Find unexplained factors' in the list above.

Review of Breech
Flystrike Risk Factors

Breech modification alternatives to reduce the reliance on mulesing

SkinTraction (SKT)

- Hope to work with a commercial company to investigate further R &D to lift the restrictions with the APVMA and make SKT more commercially viable.

Liquid Nitrogen Process (LNP)

- Steinfort Agvet is redeveloping this technology, without AWI funding.

Clips

- Still in use but demand is low, no longer commercially available.

Laser Technology

- Will need to see successful results from proof of concept work before considering further investment.

Wrinkle Reduction

Mulesing	c1.0 score
SkinTraction	c0.75 score
LNP	c0.75 score
Clips	c0.3 score



Improved management practices to advance lifetime welfare



The University of Sydney



Sheep Ectoparasite Resistance Update

Better use of chemicals

Provision of pain relief

Analgesia for Sheep

Residue Deletion Studies

Gap Evaluation of Pain Alleviation Studies

New Chemicals for Sheep Blowfly Control

Development of new chemicals

Improved Management Practices

Improved methods of delivery of chemicals

Nanotechnology for Flystrike and Lice Control

Genetics of Blowfly Parasitism

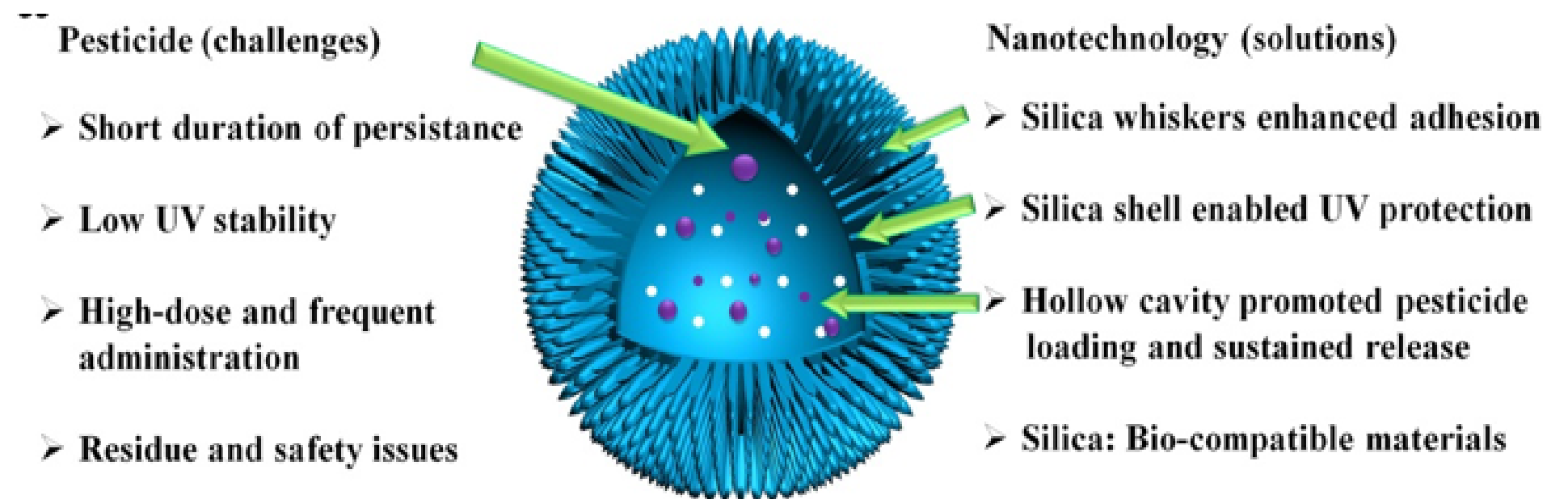
New parasite control options/vaccines

CRISPR

Nanotechnology options for Flystrike and Lice Control

- Develop and test nanocapsule formulations that can provide prolonged, safe and residue free protection against sheep flystrike and lice
- Collaborative project with an animal health company, to be delivered by UQ and QDAF

- **Still being contracted.**



Gap Evaluation of Pain Alleviation Studies underway

- Stocktake of published research into welfare impacts of castration, tail docking and mulesing
- Alternatives to these procedures
- Potential pain relief strategies
- Methods of assessing pain and analgesic efficacy.

A gap analysis and recommendations for future research directions (due 2019)



On-going Training and Engagement

Adoption of best practice strategies to improve the lifetime welfare of sheep and reduce reliance on mulesing

Foundation Activities

AWI Animal Husbandry Survey

Benchmarking Australian Sheep Parasite Control Survey

Sheep Ectoparasite Resistance Update

Rate of Genetic Gain Update

Stocktake of Industry Communications in Breech Flystrike Management

Planning

Development of a Breech Flystrike Training and Engagement Plan

Implementing



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Monitoring

Monitor, Evaluate and Improve

SHEEP HEALTH, WELFARE & PRODUCTIVITY



SHEEP HEALTH



BREECH FLYSTRIKE



LATEST PUBLICATIONS

R&D UPDATE

AWI'S APPROACH

BREECH GENETICS

WELFARE IMPROVED SURGERY

INTRADERMALS

MONITORING PROGRESS

MARKET TRANSPARENCY

FLIES

LICE

LATEST PUBLICATIONS



AWI's latest publications on breech flystrike prevention. Click the links to view or download the publications in PDF format:

- [Pain relief research for mulesing - June 2018 *Beyond the Bale* article](#) (PDF 668Kb)
- [Observed benefits of using Buccalgesic® with Tri-Solfen® - June 2018 *Beyond the Bale* article](#) (PDF 739Kb)
- [Welfare assessments of analgesic options in female lambs for surgical mulesing and its alternatives \(May 2018\)](#) (PDF 1.8MB)
- [Planning for a non-mulesed Merino enterprise \(March 2018\)](#) (PDF 589Kb)
- [Pain relief update: Buccalgesic® formally approved for mulesing December 2017 *Beyond the Bale* article](#) (PDF 487Kb)
- [AWI Breech Strike RD&E Program – Improving Lifetime Welfare presentation \(November 2017\)](#) (PDF 4MB)
- [AWI Breech Flystrike Strategy 2017/18 – 2021/22 October 2017](#) (PDF 318Kb).
- [AWI RDE and Communications Strategy – Breech Flystrike Prevention Program September 2017](#) (PDF 64Kb).
- [AWI Flystrike Prevention Program – Report Card](#)



AWI's *Managing Breech Flystrike* publication.

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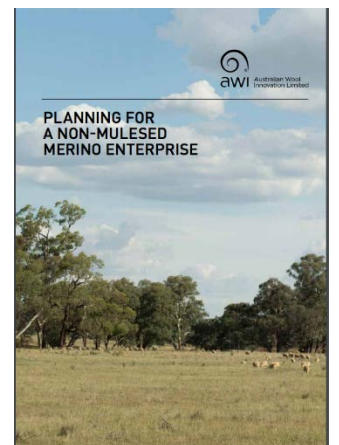
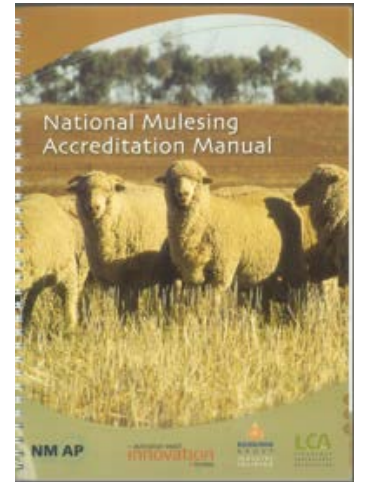
AWI grower networks

AWI's grower networks are fundamental to the spread of new ideas, continuing education and the adoption of best practice.

[Read more](#)

Training and Engagement – next steps

- Implementation of individual Project Communication and Extension Plans
- Continued promotion of the use of pain relief
- Continued promotion of the NWD, transparency
- Development of a Sheep Blowfly Resistance Strategy
- ParaBoss Training for Advisors
- National Mulesing Accreditation Program (NMAP) review and update
- Moving to a Non-Mulesed Enterprise, further case studies, grower groups.



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LCA
LIVESTOCK
CONTRACTORS
ASSOCIATION

WOOLPRODUCERS
AUSTRALIA

Monitoring & Evaluating

Is the Breech Flystrike RD&E Program meeting industry and stakeholder expectations:

- Biannual AVA Audit
- Animal Welfare Forum
- Annual Genetic Review
- Industry consultation

What is the Impact of the Program - changes in Knowledge, Attitudes, Behaviour, Aspirations:

- Individual project evaluation
- Benchmarking Australian Sheep Parasite Control Surveys
- Wool Market Analysis – premiums and discounts
- AWEX National Wool Declaration
- AWI Survey of Husbandry Practices



- SHEEP HEALTH, WELFARE & PRODUCTIVITY
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- INTRADERMALS
- MONITORING PROGRESS
- MARKET TRANSPARENCY
- FLIES
- LICE
- WORMS
- OTHER HUSBANDRY
- BIOSECURITY
- SHEEP NUTRITION
- SHEEP BREEDING
- PEST ANIMALS
- LAMB SURVIVAL
- AUSTRALIAN SHEEP WELFARE STANDARDS AND GUIDELINES
- SMART TAGS

MONITORING PROGRESS



Merino ewes and Merino lambs, Midlands, Tasmania.

AWI and its partners are making strong progress toward reducing woolgrowers' reliance on mulesing and improving the lifetime welfare outcome for sheep.

A proportion of woolgrowers no longer use the traditional procedure. In 2005, a survey of woolgrowers by the Sheep CRC indicated only five per cent of lambs would remain unmulesed. By 2013/14, an AWI survey indicated 40 per cent of all lambs and 24% of Merino lambs would remain unmulesed. This is a significant change in practice.

Where the risk of flystrike in sheep is too high, woolgrowers are replacing the traditional procedure with welfare-improved practices. Welfare-improved surgery with pain relief protect sheep from flystrike while longer term breeding programs build natural flystrike resistance in the flock.

Results from genetic research indicate breeding for enhanced flystrike resistance without a high reliance on chemical control and ensuring productivity is high can be successful but it will take a considerable amount of time to achieve particularly for super fine and fine wool sheep and sheep in high dag environments. There are approximately 100 non-mules Merino and Dohne Stud.

Independent External Reviews

External reviews of the AWI breech flystrike research, development and extension (RD&E) program are regularly commissioned to ensure that the program continues to meet industry and stakeholder expectations and to identify opportunities for future research.

The Australian Veterinary Association (AVA) biannually reviews the AWI breech flystrike RD&E program, as part of an undertaking to international retailers.

Click on the link to view the latest [AVA Audit Report](#) (PDF 290Kb).

Independent reviews of the genetic component of the AWI breech flystrike RD&E program are undertaken annually to identify its successes and potential for improvement.

Click on the link to view the latest [Genetic Review Report](#) (PDF 243Kb).

National Wool Declaration

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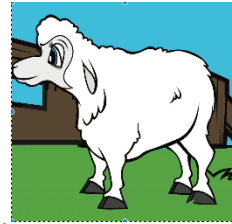
[Read more](#)

Latest AVA and Genetics Review Reports can be found on wool.com



What have we achieved?

- Baseline to measure change in blowfly chemical resistance
- Fly Genome mapped



- Sound subjective and objective genetic selection strategies using indirect traits
- Pre and post pain relief
- Best practice chemical use principles
- Credible passive extension vehicle

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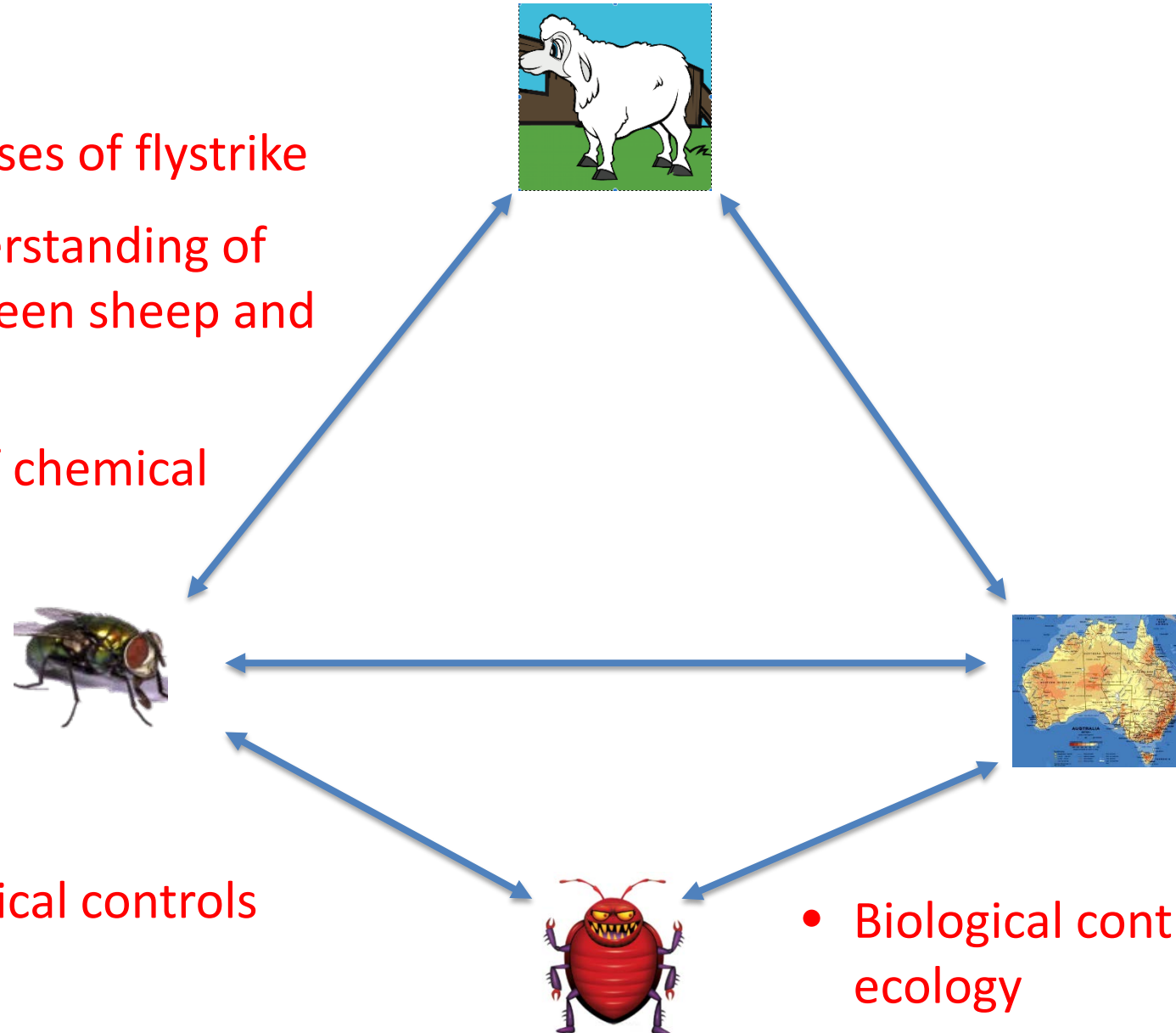


- Good understanding of fly ecology



Where to next?

- Unexplained causes of flystrike
- Incomplete understanding of interaction between sheep and fly/larvae
- Increasing risk of chemical resistance



- Biological controls

- Biological control ecology

- New prevention chemicals
- Vaccine development
- Commercially viable breech modification alternatives
- Comprehensive anaesthesia
- Availability of high indexing, low risk super fine/fine NM sires
- Regulation of follicle activity (expression)
- Low cost crutching
- More active extension
- Economics of managing flystrike



This publication is based on information presented at the Australian Wool Innovation Limited (AWI) National Wool Research and Development Technical Update on Breech Flystrike Prevention held on 17th July 2018. Some information in this publication has been contributed by one or more third parties and licenced to AWI, and AWI has not verified whether this information is correct. This publication should only be used as a general aid and is not a substitute for specific advice. Any reliance on the information contained in this publication is done at your own risk and to the extent permitted by law, AWI and any third party contributors exclude all liability for loss or damage arising from the use of the information in this publication. Except to the extent permitted under Copyright Law no part of this publication may be reproduced by any process, electronic or otherwise without the specific written permission of AWI. Neither may information be stored electronically in any form whatsoever without such permission. AWI gratefully acknowledges the funds provided by the Australian government to support research, development and marketing of Australian wool. GD2792