

AWI RESEARCH, DEVELOPMENT, EXTENSION & COMMUNICATIONS STRATEGY: BREECH FLYSTRIKE PREVENTION PROGRAM



Updated September 2017

Australian Wool Innovation (AWI) is the research, development and marketing organisation for the Australian Wool Industry. Animal welfare and flystrike prevention – a highly complex issue – is AWI's number one research priority. Since 2005 considerable progress in the R&D program has been made, with AWI investing \$59 million in health and welfare R&D activities, including \$35 million specifically in breech strike prevention. AWI remains committed to the research, development and extension (RD&E) program to reduce the reliance on mulesing and improve the lifetime welfare of sheep.

| AREAS OF INVESTIGATION | OBJECTIVE | CURRENT STATUS/PROGRESS MADE | RESEARCH DEVELOPMENT AND EXTENSION PARTNERS |
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| BREEDING & SELECTION | Determine the relative importance of the key five breech traits (dags, breech wrinkle, urine stain, breech cover and wool colour) and their association with breech strike | Phase 1 (2005-2010) identified the importance of these key breech traits. Phase 2 (2010-2015) focused on improved trait accuracy and created resistant and susceptible lines under a normal crutching regime. Phase 2 also identified additional traits associated with breech strike (ie, face cover and neck wrinkle). | Commonwealth Scientific & Industrial Research Organisation (CSIRO) |
| | Identify breech trait heritability and correlations with other important traits, and use them in the creation of ASBVs and sheep selection indexes | Breech trait heritabilities and genetic correlations with other important production traits have been determined. The accuracy of breeding values continues to increase, allowing correlations between breech and production traits to be refined more precisely. | Department of Primary Industries and Regional Development Western Australia Hanrob Dog Academy |
| | Further research to identify remaining unknown causes of breech strike | Quarantine sniffer dogs showed they could successfully identify wool samples from flystrike resistant and susceptible sheep from both research sites. Gas chromatograph and electro-antennogram results have been used to isolate the odour differences between the resistant and susceptible lines but the results have been inconsistent. Further R&D is being planned. | University of Western Australia |
| | Produce and communicate breeding values to woolgrowers to encourage adoption of breech trait scoring | ASBVs have been released and ram breeders are increasingly incorporating breech traits into their breeding objectives. Selection using visual, raw data and Breeding Values is a key focus in woolgrower communications. Target breech trait ASBVs required for a non-mulesed enterprise that does not have an over reliance on chemicals to control breech strike have been identified. | Meat and Livestock Australia (MLA) Sheep Genetics (SG), Australian Merino Sire Evaluation Association (AMSEA) & Sheep Cooperative Research Centre (SCRC) & Merino Lifetime Productivity Project (MLP) |
| | Identify genomic associations with flystrike resistance and susceptibility | Genomic correlations between breech strike and the key breech traits has been conducted. The correlations are low and currently not able to be commercialised into a breeding tool for growers but further testing and analysis is under review. | CSIRO, DPIRDWA & Sheep CRC |
| | Explore ways to reduce the incidence of dags, particularly in southern Australia | Continue to communicate the importance of breeding for improved worm resistance and lower dags. Differences in immune responses between high and low dag sheep and high and low worm resistant sheep are being investigated. | State Departments of Agriculture, various Universities |
| BREECH MODIFICATION DEVELOPMENTS | Develop non-surgical breech strike prevention alternatives | R&D for Clips completed and commercialised. Clips available to growers since 2009, with limited uptake. | Veterinary Health Research, Joan Lloyd Consulting, Strategic Bovine Services, Leader Products et al |
| | | R&D into the intradermal option of Sodium Lauryl Sulphate [Skintraction®] commenced 2008. Skintraction® significantly reduces breech wrinkle and breech wool cover. | Cobbett Technologies |
| | | APVMA registered Skintraction® in May 2015 with tight label use protocols that restrict commercialisation. Further R&D is being discussed with new research organisations. | RedCap Solutions, Australian Pesticides & Veterinarian Medicines Authority (APVMA) & Cobbett Technologies |
| | | Preliminary welfare assessments have been conducted on all non-surgical alternatives with encouraging results. | CSIRO and Animal Welfare Science Centre |
| | | Liquid nitrogen application to reduce breech wrinkle and breech cover has shown promising results in field trials. | Steinfort AgVet |
| | | Use of lasers to achieve a permanent crutch, wig and ring have failed to pass the 'proof of concept' stage. | Zeta LLC & CSIRO |
| | National Mulesing Accreditation Program (NMAP) training is being reviewed and included in the Vocation and Education Training Quality Framework. | Animal Health Australia (AHA) WoolProducers Australia (WPA), Livestock Contractors Association (LCA) and NSW Department of Primary Industries (NSW DPI) | |
| | Improved pain relief options commercially available | Tri-Solfen a topical anaesthetic became available to growers in 2006. Greater accessibility via over the counter sales commenced 2014. | Developed by Animal Ethics, commercialised by Bayer Animal Health |
| | | Surveys indicate 73% of Merino lambs mulesed were treated with pain relief in 2016/17. | AWI & MLA Forecasting Committee |
| | | Buccalgesic® trials for lamb marking have shown encouraging results. Buccalgesic® and Metacam 20® were released in late 2016. Both are meloxicam based analgesic products that reduce pain and inflammation. | CSIRO, Troy Laboratories Boehringer Ingelheim |
| Work continues on the delivery of a local anaesthetic (Lignocaine) to coincide with the application of elastic rings at lamb marking (Numnuts™). | | 4cDesigns, Moredun Research (UK), MLA | |
| Work continues to reduce the withholding periods for local anaesthetics and increase the number of APVMA approved uses, ie lameness and shearing cuts. | Veterinary Health Research, Animal Ethics Pty Ltd, Red Cap Solutions | | |
| A detailed welfare study on the Liquid Nitrogen Process and Buccalgesic® for mulesing is being conducted. | CSIRO, Troy Laboratories, Steinfort AgVet | | |

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| IMPROVED MANAGEMENT PRACTICES | Reduce the reliance on mulesing by increased adoption of other management practices | Research has shown that management can reduce the risk of breech strike through practices such as more frequent shearing and crutching and shorter lambing periods. | Sheep CRC, CSIRO, State DPIs, Universities of Melbourne, Adelaide and Sydney. Novartis, NSW DPI and ParaBoss |
| | | Research indicates good protection to breech strike can be achieved by increased use of long acting chemical treatments but that this also increases the risk of fly resistance to the chemicals, so the increased use needs to be regarded as a short term option. | |
| | Reduce the potential of flies developing chemical resistance | Trials have been conducted to monitor risk of resistance under lab and field conditions. | Sheep CRC, NSW DPI, University of New England (UNE) |
| | | The blowfly has been gene sequenced, identifying 576 genes that are unique to the blowfly, of which 26 hold specific R&D interest at this stage. This offers future opportunities for new targeted host-specific control chemicals and vaccines. | Baylor College of Human Medicine, University of Melbourne and CSIRO and University of Queensland |
| Trials have identified proteins essential for fly and larvae survival. A range of chemicals are being tested to find a chemical that specifically impacts on these fly and larvae proteins. | | | |
| GROWER, INDUSTRY & DOMESTIC STAKEHOLDER EXTENSION, TRAINING & COMMUNICATIONS | Investigate and monitor changes in on farm management strategies for breech strike control | Best Practice information developed and disseminated on breech strike control to encourage practice change. | AWI Extension Networks, State DPIs, ParaBoss, AWI Beyond The Bale, website and Newsletters |
| | | National Wool Declaration (NWD) available to growers to declare mulesing status since 2008. | Australian Wool Exchange (AWEX) |
| | | Premiums and discounts that growers receive from practice changes adopted to improve welfare and reduce reliance on mulesing ie; non mulesing, use of pain relief, accelerated shearing etc. along with changes to staple length and strength issues from accelerated 6 monthly shearing are being monitored. | University of Sydney, AWEX, Surveys |
| | | Genetic trends in the breech traits, other welfare traits and the key productivity traits are being monitored. | MLA, AGBU, Australian Merino Sire Evaluation Association, and Wether Trials (NSW DPI) |
| | Provide woolgrowers, and stakeholders updates of the RD&E outcomes | Nationwide grower meetings and workshops are held. | MLA, AWEX, AWI Networks, Sheep CRC, Ram Breeders, State Farming Organisations, State DPI's, Wool Brokers |
| | | FlyBoss, WormBoss & LiceBoss were combined to form ParaBoss in 2013. This improved tool for growers has resulted in increased awareness and practice change. Funding has been continued for ParaBoss for 2016 to 2020. The average number of users per month across all ParaBoss sites has increased from 6,922 in 2014 to 13,275 in 2017. The Managing Breech Strike Manual was updated in 2017. | MLA, Sheep CRC and University of New England UNE |
| | | AWI Woolgrower Industry Consultative Committee (ICC) provides a flow of information and understanding of the research progress and supply chain developments to the key woolgrower representative organisations. | Australian Association of Stud Merino Breeders (ASMBBA), Australian Wool Growers Association (AWGA), Pastoralists and Graziers Association of WA (PGA) Broad Wool Growers, Australian Superfine WoolGrowers Association (ASWGA), WoolProducers Australia (WPA) and Federal Department of Agriculture and Water Resources (DAWR) |
| | | AWI Animal Welfare Forum meets regularly to improve the flow of information and understanding of the RD&E progress. Regular updates and meetings are held with woolgrower organisations Australian Government; State Departments of Primary Industry. | Animals Australia (AA), Australian Veterinary Association (AVA), Four Paws, RSPCA, Researchers and DAWR |
| | | Regular meetings with Australian Government; biennial meetings with state DPIs are held. | DAWR, State DPIs, State Farming Organisations, Stud Merino Breeder Assns |
| | | Biennial Breech Flystrike RD&E Update to provide results of the Breech Flystrike RD&E Program have been held in 2008, 2010, 2012, 2014 and 2016. | All RD&E partners and stakeholders |
| INTERNATIONAL SUPPLY CHAIN, TRAINING & COMMUNICATIONS | Ensure international stakeholders are aware of progress in RD&E and ongoing commitment to animal welfare | Regular updates including annual Animal Welfare Seminars with retailers, brands and their associations. | Research organisations, welfare organisations, retail associations and supply chain partners |
| | | Independent six-monthly audit of AWI's Breech Flystrike RD&E Strategy by AVA. | Australian Veterinary Association (AVA) |
| | | Annual audit of AWI's Breech Flystrike Breeding & Genetic Selection RD&E program. | University of Adelaide & University of Queensland |
| | Provide advice and support to retailers and brands in addressing animal welfare and related CSR issues | Ongoing support to individual retailers, brands and processors as required. | AWI staff and various commercial partners |