

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

Updated August 2015

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 \$33 million specifically in breech flystrike prevention. AWI remains committed to the research, development and extension (RD&E) program to reduce the reliance on mulesing and improve the lifetime welfare for sheep.

AREAS OF INVESTIGATION	OBJECTIVE	CURRENT STATUS/PROGRESS MADE	RESEARCH DEVELOPMENT AND EXTENSION PARTNERS
<b>BREEDING &amp; SELECTION</b>	Determine the relative importance of the original five breech traits (dags, breech wrinkle, urine stain, breech cover and wool colour) and their association with breech flystrike	Phase 1 (2005-2010) identified the importance of the traits; Phase 2 (2010-12) focused on generating more data to improve the overall accuracy and create resistant and susceptible lines under a normal crutching regime	Commonwealth Scientific & Industrial Research Organisation (CSIRO)
		Phase 2 also identified additional traits associated with breech flystrike (ie Urine Stain, face cover and neck wrinkle)	
	Identify breech trait heritability and correlations with other important traits, to be used in the creation of ASBVs and sheep selection indexes	Breech trait heritabilities and genetic correlations with other important production traits identified. Accuracy of breeding values continues to increase, allowing correlations between breech and production traits to be determined more precisely	Department of Agriculture and Food Western Australia (DAFWA) Hanrob Dog Academy
	Further research to identify remaining unknown causes of breech flystrike	Quarantine sniffer dogs and female flies were able to successfully identify wool from flystrike resistant and susceptible sheep from both research sites	University of Western Australia
		Gas chromatograph and electro-antennogram are being used to isolate the odour differences between the resistant and susceptible lines. Preliminary results are encouraging	
	Produce and communicate breeding values to farmers to encourage adoption for main breech traits	ASBVs have been released and ram breeders are increasingly incorporating these flystrike management tools into their breeding objectives	Sheep Genetics (SG), Australian Merino Sire Evaluation Association (AMSEA) & Sheep Cooperative Research Centre (SCRC)
	Identify genomic associations with flystrike resistance and susceptibility	Genomic correlations have been identified for breech strike. These correlations are low and currently not able to be commercialised into a breeding tool for growers. Further work continues	CSIRO, DAFWA & SCRC
Explore ways to reduce the incidence of dags, particularly in southern Australia	Continue to communicate the importance of dags, adult worm control and existence of hypersensitivity to low but increasing larval numbers in the sheep	State departments of agriculture, various universities	
<b>BREECH MODIFICATION DEVELOPMENTS</b>	Develop non-surgical breech flystrike prevention alternatives	R&D for Clips completed and commercialised. Clips available to growers since 2009, approx 40,000 lambs treated each year	Veterinary Health Research, Joan Lloyd Consulting, Strategic Bovine Services, Leader Products et al
		R&D into intradermal option of Sodium Lauryl Sulphate (Skintraction™) commenced 2008. Skintraction™ show significant reductions in wrinkle and breech wool cover	Cobbett Technologies
		APVMA registered Skintraction™ May 2015 with tight label use protocols and further work is required to enable commercialisation	RedCap Solutions, Australian Pesticides & Veterinarian Medicines Authority (APVMA) & Cobbett Technologies
		Preliminary welfare assessments conducted on all non-surgical alternatives at treatment, with encouraging results	CSIRO and Animal Welfare Science Centre
		Liquid nitrogen application to reduce breech wrinkle and breech cover has shown promising results in early field trials in mid 2015	John Steinfort, Ag Vet
		Use of lasers to achieve a permanent crutch, wig and ring failed to pass 'proof of concept'. New laser technology used in human tattoo removal may prove useful	Zeta LLC & CSIRO
		National Mulesing Assurance Program (NMAP) training is being revamped and included in the Vocation and Education Training Quality Framework	NSW DPI (Tocal Ag College), Livestock Contractors Association (LCA), Animal Health Australia and WoolProducers Australia

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<b>BREECH MODIFICATION DEVELOPMENTS</b>	Develop further welfare-improved surgical procedure	Tri-Solfen became available to all growers in 2008. Greater accessibility via over the counter sales commenced 2014	Developed by Animal Ethics, commercialized by Bayer Animal Health
		Surveys indicate 70% of lambs mulesed were treated with pain relief in 2013	AWI & MLA
		Buccal meloxicam trials for lamb marking have shown very encouraging results. It's expected to be registered and available to growers in 2016	CSIRO and Troy Laboratories
		A detailed welfare study on all modification alternatives will be conducted over next two years	CSIRO, Troy Laboratories, Bayer, Animal Health, Cobett Technologies and John Steinfort Ag Vet
<b>IMPROVED MANAGEMENT PRACTICES</b>	Reduce the reliance on mulesing by increased adoption of other management practices	Research indicates good protection can be achieved by long acting chemical treatments. Double crutching and short lambing reduces the risk of flystrike	Sheep CRC, CSIRO, State DPIs, Universities of Melbourne, Adelaide and Sydney. Novartis and NSW DPI
	Reduce the potential of flies developing chemical resistance	Trials continue to monitor risk of resistance under lab and field conditions	AWI Extension Networks, Sheep CRC, NSW DPI, IPM Survey
		The blowfly has been gene sequenced, identifying nearly 2000 unique genes, offering opportunities for targeted host-specific control chemicals and vaccines	Baylor College of Human Medicine, University of Melbourne and CSIRO
<b>GROWER, INDUSTRY &amp; DOMESTIC STAKEHOLDER EXTENSION, TRAINING &amp; COMMUNICATIONS</b>	Investigate and monitor changes in on farm management strategies for breech flystrike control	National program to collate data and case studies available on FlyBoss website	AWI Extension Networks SCRC, State DPIs
		National Wool Declaration (NWD) available to growers to declare mulesing status since 2008	Australian Wool Exchange (AWEX)
		Monitor the auction prices of non-mulesed, ceased-mulesed, pain relief and non-declared wool	University of Sydney
		Monitor genetic trends in breech flystrike indicator traits and overall sheep productivity	Australian Merino Sire Evaluation Association, Sheep Genetics, and Wether Trials (NSW DPI)
	Provide woolgrowers, the domestic wool industry and relevant stakeholders updates of the RD&E outcomes and welfare advances to manage breech flystrike prevention and improve animal welfare	Nationwide grower meetings & FlyBoss workshops	AWEX, AWI Networks, Sheep CRC, Ram Breeders, State DPI agencies (eg DAFWA non-mulesing network), Wool Brokers
		FlyBoss, WormBoss & LiceBoss were combined to form ParaBoss in 2013. This improved tool for growers has resulted in increased use	AWI, MLA, SCRC and University of New England
		AWI Industry Consultative Committee (ICC) meets three times a year. Provides two-way communication and improved flow of information and understanding of the research progress and supply chain developments	Australian Association of Stud Merino Breeders (ASMBA), Australian Wool Growers Association (AWGA), Corriedale Association (X breeds), Australian Superfine WoolGrowers Association (ASWGA), WoolProducers Australia (WPA)
		Animal Welfare Forum six monthly to improve flow of information and understanding of the research progress	Animals Australia, Animal Liberation, Australian Veterinary Association (AVA), Compassion in World Farming, RSPCA
		Regular meetings with Australian Government; biennial meetings with state agencies	Department of Agriculture & state agencies
<b>INTERNATIONAL SUPPLY CHAIN EXTENSION, TRAINING &amp; COMMUNICATIONS</b>	Ensure international stakeholders are aware of progress in RD&E and welfare, reflecting ongoing commitment to animal welfare	Six monthly updates provided and annual Breech Flystrike Prevention Seminars with retailers, brands and their associations	AVA, research organisations, welfare organisations, retail associations and supply chain partners
		Independent six monthly audit of AWI's RD&E strategy by AVA, reporting on overall progress	AVA
		Biennial Flystrike Technical R&D Update to provide results of the FSP in 2008,2010,2012 and 2014	All partners and stakeholders.
		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 supply chain partners
	Develop and maintain efficient two-way communication along supply chain between grower and retailer	Information provided along the supply chain appropriate to their role in sourcing or establishing supply chains	