WOOLMARK

ANIMAL WELFARE, MULESING AND WOOL



Australian woolgrowers place animal welfare at the centre of their work, and flystrike remains one of the most serious challenges they face. The industry's focus is twofold: protect sheep from this painful and potentially fatal condition, and continue accelerating long-term solutions that reduce reliance on mulesing.

WHY FLYSTRIKE MATTERS

Flystrike is one of the most serious welfare risks facing sheep in Australia. Blowflies lay eggs on moist wool, most commonly around the breech and tail, but also on the body or poll. When the eggs hatch, maggots burrow into the skin and flesh, causing extreme pain, infection and, potentially, death.

The challenge is uniquely Australian. Warm temperatures, periods of rain, and the presence of the Australian sheep blowfly (Lucilia cuprina), which causes more than 90% of cases, create highly favourable conditions for flystrike across major wool-growing regions. For woolgrowers, losses, prevention and treatment cost the industry more than AU$320 million per year.

WHY MULESING HAS BEEN USED

Mulesing is a once-only surgical procedure that removes excess breech skin, significantly reducing lifetime risk of flystrike. It has been used since the 1930s because those skin folds trap moisture and dags, attracting blowflies. Most Australian woolgrowers now use pain relief (both anaesthetic and analgesic) during the procedure, and the industry continues to accelerate adoption of best-practice welfare standards.

At the same time, the industry's strategy is clear: reduce reliance on mulesing through genetics, management and new technologies. Woolmark's parent company Australian Wool Innovation (AWI) has invested more than AU$48 million (2001-2024) into flystrike prevention research, development, and extension to find improved solutions.

Australia exports more non-mulesed Merino wool (<24.5 micron) than any other country, and the proportion continues to rise each year.

KEY ADVANCEMENTS IN FLYSTRIKE PREVENTION

AWI invests heavily in research, genetics and on-farm tools to give woolgrowers credible alternatives and reduce long-term dependence on procedures such as mulesing.

Significant progress has been made to reduce reliance on mulesing through genetics, better management practices and new tools for growers. The most effective long-term solution is breeding sheep that are naturally less prone to flystrike. AWI-funded research has identified the traits that matter – such as breech wrinkle, dags and fleece characteristics – and developed breeding values and genomic tools that growers now use widely.

On-farm management has also improved. Woolgrowers have access to smarter forecasting tools, integrated pest management strategies and more targeted chemical treatments, with growing investment in low-residue biopesticides as chemical resistance increases.

Non-surgical breech treatments have been trialled, but only liquid nitrogen remains available. Together, these advancements mean more woolgrowers can confidently reduce reliance on mulesing while protecting lifetime sheep welfare.



MOVING TOWARD NON-MULESED WOOL

Australia is shifting. More woolgrowers are choosing not to mules, supported by breeding progress, better on-farm tools and changing climatic patterns.

Transitioning away from mulesing requires:

- a long-term breeding plan
- management changes to reduce flystrike risk
- support and technical guidance

AWI's StrateFly™ program helps woolgrowers design their transition strategy, while AmpliFly™ provides one-on-one coaching to develop and refine whole-farm flystrike management plans.

The goal is clear: enable woolgrowers to adopt non-mulesed systems without compromising lifetime welfare.



LOOKING AHEAD: THE FUTURE OF FLYSTRIKE RESEARCH

Looking to the future, the industry is investing in next-generation innovations that prioritise sustainability while minimising reliance on mulesing and chemicals for managing flystrike.

Current research areas include:

- **Genetics/genomics:** accelerating breeding for high natural resistance.
- **Sterile Insect Technique (SIT):** releasing sterile male flies to suppress blowfly populations at landscape scale.
- **Biological fly traps** using natural attractants.
- **Blowfly genomics** to disrupt the insect life cycle.
- **Low-residue treatments** combining nanotechnology with plant-based ingredients such as tea tree oil.
- **A flystrike vaccine** currently in early development—a potential game-changer that could dramatically reduce both chemical and procedural interventions.

These innovations reflect a long-term commitment: minimise reliance on mulesing, improve lifetime welfare, and align Australian wool production with the sustainability expectations of global brands and consumers.

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