
WOOL 2030 – A STRATEGIC PLAN FOR AUSTRALIAN WOOLGROWERS

DISCUSSION PAPER 4:
OPPORTUNITIES AND THREATS

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1. INTRODUCTION

This is the fourth in a series of papers created to stimulate discussion among Australian woolgrowers in preparation for their input to the development of Wool 2030 – A strategic plan for Australian woolgrowers. This paper briefly discusses opportunities and threats for the Australian wool industry. It builds on earlier papers, especially paper three which covered issues relating to ‘social licence’.

Like all businesses, especially agricultural ones that are exposed to variable climatic conditions, wool production businesses face a range of threats that need to be identified and have risk management strategies implemented. The wool industry also has a range of opportunities which it needs to explore and, if appropriate, exploit. The following paper identifies some of these opportunities and threats to the sector.

This paper is by no means comprehensive, but rather a discussion of some of the more prominent challenges or opportunities facing the wool industry. A series of questions is provided at the end of each section within the paper to facilitate feedback during discussion. The reader is encouraged to consider these and also to develop their own questions about how these opportunities and threats might impact the industry over the next decade, and what might be the implications for Wool 2030.

2. OPPORTUNITIES

1. BUILDING ON WOOL'S STRENGTHS IN THE MARKET

As also covered by paper 1, there are market trends that are likely to favour Australian wool. These include¹:

- *Across society, there is an ongoing trend of casualisation and prioritisation of comfort for work and home dressing.*
- *Within womenswear, the continuing increase of casualisation will result in a growth of knitwear and athleisure, opening up a greater opportunity for finer wool microns and next-to-skin products.*
- *Within the menswear category, the casualisation trend will drive a growth in knitwear, more flexible tailored textiles and technical textiles. Once again, a desire for easy-care, versatile garments will open opportunities in superfine Merino wools as fast drying, thermoregulating everyday wear.*
- *Within the sports category, there will continue to be a growing focus on health and wellness. Subcategories such as skin health will provide an opportunity for superfine Merino yarn as a therapeutic skin treatment.*
- *Biodegradability, recycling and chemical-free innovations continue to set the guidelines for sustainable developments within the sport category, making Merino wool blends an attractive option for brands. It is expected that sports brands will further embrace Merino's properties of moisture wicking, breathability, odour resistance and biodegradability to update styles with a natural performance marketing angle.*

- *Like fashion, the interior design sector has actively migrated towards ethical, sustainable and natural fibres in recent years. While wool's inherent eco-credentials – natural, renewable, biodegradable – perfectly position the fibre as a more sustainable choice for interior spaces, its many benefits are its commercial selling point (fire resistance, resilience, easycare, and wellness attributes, such as temperature regulation during sleep and air purification ability).*

For the market categories in which wool currently operates, should there be any consideration of expanding the Woolmark brand to include quality with eco credentials / provenance? As a certification mark, is that legally possible? Should the industry have an appetite to explore a wool recycling industry as a way of adding value to the virgin fibre? Finally, how can we better measure and communicate the return on investment (ROI) from marketing campaigns?

Discussion topic:

- Should the industry focus its marketing efforts on 'established segments' or chase new ones?

¹Armstrong, L in Wilcox et al (2020)

2. TOTALLY NEW WOOL PRODUCTS

Even before COVID 19 there had been a strong move in the more affluent society towards greater consciousness of health and wellness, and COVID 19 will arguably aid this trend. Some of this sentiment is reflected in point 1 above. However, can wool become an integral solution within the 'health' market?

AWI has been active in this area. In terms of totally new uses for wool in the health space, there are promising opportunities such as sleepwear to improve sleep quality and base layers to improve skin health. Both areas seek to exploit wool's ability to maintain a more stable microclimate between the garment and the skin. Both areas use superfine wool.

- Sleepwear is dominated by cotton, then viscose and even some polyester, but very rarely wool. When people sleep and especially when in deep sleep, the body's ability to thermoregulate is diminished. This becomes even more important as people get older because their ability to thermoregulate is reduced – they have easily disrupted sleep and increased wakefulness. Recent research at Sydney University has shown that in a comparison of wool, cotton and polyester sleepwear on adults above 50 years of age, wool came out on top with faster sleep onset and less fragmented sleep.

- Base layers to improve skin health is another area of focus especially where the wearing of wool garments directly against the skin, and the more stable microclimate as a result, might benefit sufferers of skin complaints such as eczema. Clinical studies have shown a statistically significant improvement in eczema symptoms from changing to wool base layer garments from those made with other fibres. While this is a promising area of research, AWI advises there is still much to do to overcome particularly strong perceptions ('wool is itchy'; 'I am allergic to wool').

Discussion topic:

- What priority should the industry / AWI place on developing totally new products in areas in which wool has not previously held a strong presence – particularly those relating to health and well-being?

3. RESEARCH, DEVELOPMENT AND ADOPTION

AWI is the primary investor in research, development and adoption (RD&A) for the benefit of Australian woolgrowers and the industry more generally. Rural R&D Corporations like AWI invest where there is market failure, so the risks associated with their investments tend to be higher. AWI invests in:

- On-farm R&D (pastures, genetics, animal health, welfare etc.)
- Off-farm R&D (new processes and products etc.)
- Extension, adoption and capacity building.

AWI details its RD&A focus through its Strategic Plan² and its Annual Operating Plan (AOP)³.

In reference to research and development (R&D), it is common to talk about a 'balanced portfolio' that considers the mix of factors such as the timeframe for outcome delivery (short-, medium-, long-term); the risk of non-delivery (low, medium, high); the type of outcome expected (strategic, tactical) and the coverage or applicability of the outcome (national, regional).

Currently AWI's portfolio is a balance of long term (> 3 years – strategic; such as the application of robotics), medium term (< 3 years – tactical; such as quantitative genetic evaluation) and short term (operational – today and tomorrow; such as wild dog activities). Concurrent with the associated timeframe is the degree of risk and reward – which are usually inversely correlated. AWI's strategic plan advises that the company's risk appetite, by

necessity, is towards the middle of the risk-taking spectrum.

Strategic plans and AOPs identify the key RD&A opportunities. It is worthwhile to reflect on those. Are the priorities right? Are investment allocations appropriate? Some of the issues identified at the inaugural WCG meeting in November 2019 included:

- How might new technologies (Internet of Things, remote sensing, data, robotics, machine learning etc.) impact on the industry (see also point 5 on agtech)
- Flies – we need to continue to invest into solving the fundamental sheep/fly problem e.g. fly gene technologies, blowfly vaccine, managing chemical resistance, genetic solutions for sheep
- Focus on alternatives to mulesing and best practice fly management including pain relief
- Encourage pharmaceutical companies to further invest in sheep health formulations
- Lice/worms – invest in gene technologies depending on ROI and consider a lice vaccine
- Improvements in wool harvesting

Other areas may include:

- More resilient farming systems
- New pasture varieties
- Improved wool packaging
- Alternative clip preparation
- New wool selling systems
- Other?

Discussion topics:

- How well balanced is the current AWI R&D portfolio? Should the industry focus on more / fewer projects? Is the balance between strategic, tactical and operational about right?
- What are the key priorities that the industry must pursue?

² <https://www.wool.com/globalassets/wool/about-awi/media-resources/publications/awi-strategic-plan-201920-to-202122/awi-strategic-plan-2019-2022.pdf/>

³ <https://www.wool.com/globalassets/wool/about-awi/how-we-consult/stakeholder-consultation/accordion-2/annual-operating-plan--2019-2020.pdf>

4. GENETIC IMPROVEMENT

Genetic improvement is a powerful driver of profitability [see paper 2].

AWI and the Australian Merino Sire Evaluation Association (AMSEA) have teamed up with five sire evaluation sites to deliver the Merino Lifetime Productivity Project (MLP) from 2015 to 2025. The AWI funded project is valued at \$7 million with an additional \$5 million in support from project partners.

The MLP project has been designed to capture lifetime Merino ewe data from diverse environments, genetics and Merino types to help the Australian Merino industry better select for and deliver improved lifetime performance outcomes.

The project seeks to answer many of the industry's questions in relation to selection and ewe lifetime performance, such as:

- Is it possible to select for lifetime productivity at a young age using raw data, breeding values, genomically-enhanced breeding values⁴, visual classing or a combination of industry approaches?
- What is the impact of selecting for wool, growth, reproduction, welfare and carcass traits on the productivity of Merino ewes over their lifetime?
- Why do some animals perform year in and year out, while others fade over time?

The MLP project is a significant investment for the industry.

Some of the points discussed at the previous WCG meeting included:

- Describe traits for selection by any breeding philosophy – e.g. follicle density, flystrike resistance, lamb survivability
- Increase speed and accuracy and lower the cost of data collection
- Lower the cost of DNA testing and expand applications
- Provide education on DNA tests, indexes etc
- Exploit untapped genetic variation in the Merino
- Seek government support for gene editing

Discussion topics:

- What should happen when MLP concludes in 2025?
- What else should be done in relation to genetic improvement?

⁴Genomics refers to the use of information from DNA samples. The sheep genomic test provides information about breeding value and this information is combined with pedigree and performance data in the Sheep Genetics database to increase the accuracy of Australian Sheep Breeding Values (Sheep CRC, 2014).

5. AGTECH ADVANCES

Technology is rapidly changing many areas of business and society, as well as agriculture. Where might new technologies – the Internet of Things, remote sensing, data, robotics, machine learning / artificial intelligence and so on – take us in the future? There will likely be technologies available in the future that have not even been thought of today, let alone commercialised.

AWI is investing in technology trials and research within a number of areas of agtech including automated data collection and analysis systems, fully or semi-autonomous wool harvesting, novel applications for technology within the wool industry (remote sensing, welfare monitoring), and digital awareness and adoption.

Some of the areas previously considered by the WCG in this domain include:

- Understand the importance of data for smarter business decisions and future proofing – wool production becoming a data rich environment
- Tools to facilitate accurate and frequent data collection on farm: smart tags, paddock sensors, image capture systems, etc.
- Data analysis for forecasting and enabling on-farm informed decisions
- Data to increase transparency: welfare monitoring, resource optimisation, traceability
- Labour saving technology – amount of labour e.g., virtual fencing but also reduce skill level, e.g., shearing automation
- Tailored solutions: involve producers as part of the development process, i.e., engagement in trials, validation of early prototypes etc.

Discussion topics:

- How important will agtech developments be for Wool 2030?
- Are there particular areas that should be focused upon?
- Are there opportunities for collaboration in agtech?

6. REGENERATIVE AGRICULTURE

'Regenerative agriculture' is a term that appears regularly now. What is it, and does it work?

One definition of regenerative agriculture⁵ is:

A system of farming principles and practices that increases biodiversity, enriches soils, improves watersheds, and enhances ecosystem services. Regenerative Agriculture aims to capture carbon in soil and aboveground biomass, reversing current global trends of atmospheric accumulation. At the same time, it offers increased yields, resilience to climate instability, and higher health and vitality for farming and ranching communities. The system draws from decades of scientific and applied research by the global communities of organic farming, agroecology, Holistic Management, and agroforestry.

In part, regenerative agriculture draws on the point that sustainable use of resources is not enough – we need to regenerate them. What role should regenerative agriculture play in the wool industry? Is it a promotional opportunity that the industry should grasp, or something that many farmers are already doing? It is understood that AWI marketing receives many enquiries from brands about what the industry is doing about regenerative agriculture. Do we need to be proactive in recording and reporting (for instance) sequestered carbon, healthy soils etc, as raised in paper 3?

Discussion topic:

- What role / prominence should regenerative agriculture play in Wool 2030?

⁵<http://www.regenerativeagriculturedefinition.com/>

7. IMPROVED FLOW OF INFORMATION ALONG THE SUPPLY CHAIN

It has always been important for the industry to facilitate closer relationships between wool growers and their customers, especially exporters and processors. It seems highly likely that this requirement will only increase over time. Other industries certainly see this area as crucial. Can we take any key messages from the beef or lamb industry, for example?

Producers need to be provided with information to enable them to better understand what markets they are producing for and what specifications they need to target. This has always been challenging for wool, in comparison with (say) red meat, because wool is extensively blended downstream.

At the same time, customers and consumers want to know more about the products they are buying, including information on where the product comes from (provenance) and assurances about ethical production (environment, welfare etc). This type of information can be quite qualitative in nature ('stories') and more of a challenge to transmit.

A related aspect of information flow is traceability. Traceability is important to support product claims, for example that a given batch of wool top has been sourced entirely from certified organic properties. Traceability also plays a particularly important role in an industry's response to a biosecurity breach. If foot-and-mouth disease (FMD) were to enter Australia, for example, it

would be vital to the resumption of the wool trade that 'clean' wool could be distinguished from potentially contaminated wool. This requires an accurate, trusted and preferably rapid traceability capability.

There are various industry initiatives in progress in relation to this area, for example:

- AWI has developed the wool exchange platform 'WoolQ'
- AWI has developed a Bluetooth bale tag
- AWEX is trialling RFID technology on bales
- Changes have been made to the classer's spec and downstream electronic systems to allow the capture of the Property Identification Code (PIC), which is important for disease response.

Commentary from the WCG meeting in November 2019 indicated that producers are:

- Satisfied with the daily market reporting, but is there too many - would like a one stop shop for market intelligence
- Prefer a monthly or quarterly report on long term trends and implications (e.g. base layers require shorter greasy staple length compared to wovens)
- Keen to receive information about stocks within the supply chain (tops, yarn, cloth, garments)
- Wish to push intel (e.g. provenance stories) up the supply chain to customers – it is apparent that processors want this, and growers want to get closer to their end users

Discussion topic:

- What activities does Wool 2030 need to prioritise in relation to market information and especially in bringing producers and customers closer together?

3. THREATS

1. ACCESS TO RESOURCES

Rising land prices due to scarcity and competition from other enterprises remains a threat to future wool production. These threats tend to be different across different geographic zones.

- **High rainfall zone** – these are generally around the coastline or elevated areas and tend to be challenged by lifestyle properties, competing agricultural land use especially horticulture (including vineyards), extensive and intensive meat production, and ‘sporting / recreational pursuits’ such as horses.
- **Sheep wheat zone** – largely dictated by the comparative profitability between cropping and sheep enterprises. As indicated by data from Holmes and Sacket in paper 2, while cropping has a higher per hectare average return, it also has high inter-year variability.
- **Pastoral zone** – while an area favoured for sheep / wool production, it faces other challenges such as predation from wild dogs and competition from native animals. It may also be increasingly challenged by reduced rainfall in a changing climate.

Water is another limiting resource as agricultural product will increasingly be judged by their water use efficiency. Depending on accounting methodologies used in life cycle analysis, wool production has some favourable characteristics in this regard, but these can often be misrepresented (see paper 3).

The wool industry’s ability to access land resources in the future will rely heavily on its relative profitability compared to other agricultural pursuits, along with its perception as a sustainable user of finite resources.

Discussion topics:

- Will competitive land uses increasingly restrict wool production? Is this a problem?
- Is there a specific focus that Wool 2030 should take in relation to the sustainability credentials of the industry?

2. REGULATION

What might be the impact of potential policy, legislative and regulatory changes on the Australian wool industry and how can the sector help shape these?

Considerations might include:

- Market access and trade
- Domestic and international food and fibre standards, including those for animal welfare (see paper 3)
- Other domestic issues including access to water, labour (including minimum wage, immigration and health and safety)
- Overseas investment

The industry will need to work closely with Government in these areas as well as maintaining an exceptionally good public image to help reduce risks to its licence to operate (see paper 3).

Discussion topic:

- What should the focus of Wool 2030 be in terms of regulation and market access?

3. CLIMATE CHANGE AND VARIABILITY

Australian farmers operate in one of the most variable climates of any country in the world, with extreme events and climate variability the largest drivers of fluctuations in annual agricultural income and production.

Climate models predict that minimum and maximum temperatures across much of southern Australia will continue to rise under current scenarios. The models are not so consistent about the impact of climate change on seasonal rainfall, but reductions in southern Australia at least are compelling.

The most recent 'State of the Climate, 2018'⁶ report (December 2019) indicates that the climate is changing. Key points include:

- Australia's climate has warmed by just over 1°C since 1910, leading to an increase in the frequency of extreme heat events.
- April to October rainfall has decreased in the southwest of Australia. Across the same region May–July rainfall has seen the largest decrease, by around 20 per cent since 1970.
- There has been a decline of around 11 per cent in April–October rainfall in the southeast of Australia since the late 1990s.
- Rainfall has increased across parts of northern Australia since the 1970s.
- There has been a long-term increase in extreme fire weather, and in the length of the fire season, across large parts of Australia.

For the future, the report predicts further increases in sea and air temperatures and decreases in rainfall across southern Australia with more time in drought, but an increase in intense heavy rainfall throughout Australia.

A project completed in 2012 examined what the impact of changes to temperature and rainfall at specific locations may be on grazing industry productivity and profitability. The project, SLA 2030⁷, found:

- In general, relatively small reductions in rainfall and increases in temperature, can have large negative impacts on pasture production and even larger impacts on profit.
- As temperatures increase and rainfall reduces across many parts of southern Australia, the 'growing season' will become shorter.
- However, some colder, higher elevation locations may benefit from the reduced impact on pasture growth over winter.
- The application of adaptations (management changes) such as continuous genetic improvement, strategic summer feed-lotting of sheep, alternative pasture species etc can help reduce impacts.

Discussion topics:

- How should the wool industry respond to the potential threat of climate variability and climate change (see also paper 3)?
- Is this an area for potential co-investment with other industries?

⁶CSIRO and BOM, 2019, State of the climate: 2018 (December)

⁷sla2030.net.au

4. BIOSECURITY

Australia is in the fortunate position of being free of many livestock and plant diseases that impact production in other parts of the world, such as FMD, sheep pox, Rift Valley fever, bluetongue and scrapie.

However, increasing international travel and trade mean that Australia cannot assume it will remain free of such diseases, and many experts believe that a major biosecurity breach is inevitable at some time in the future. The recent swine flu epidemic in Asia, outbreaks of FMD in South Africa and the UK and Rift Valley fever in South Africa provide a sharp reminder of the impact a disease incursion can have on trade and livelihoods.

Australia has a very robust system of emergency disease planning (AUSVETPLAN) and there continue to be major investments in R&D on FMD and other diseases across industries. The wool industry has had a concerted body of post-farm RD&E and related activities in place since 2013 and continues to invest in, for example, developing wool-specific materials for AUSVETPLAN, ways to deactivate disease organisms in baled wool, traceability systems and so on.

Discussion topics:

- How high a priority is biosecurity for Wool 2030?
- What should be the priority activities to address biosecurity risks?

5. CAPACITY BUILDING – ACCESS TO TALENT / ACCESS TO LABOUR

Wool production is a labour-intensive profession. Farm infrastructure, animal management and husbandry, and wool harvesting are all physically heavy activities – perhaps more than most agricultural sectors.

At the same time, it is imperative that we encourage the next generation to embrace the wool / sheep industry – both from an operational level (running farms) and a policy level (embracing leadership /advocacy roles to support the industry).

How should the industry respond to these challenges?

AWI and the National Council of Wool Selling Brokers, to name a few, have several programs aimed at supporting the next generation of shearers, shedhands, classers (sheep and wool), brokers and producers.

There are also a range of activities identified by previous WCG meetings. These include:

- Retention, attraction, and longevity of industry participants
- OH&S – farming is one of the most dangerous occupations (paper 3)
- Managing the perception of animal welfare
- Increasing the attractiveness and career path in the wool industry
- Ability to address labour shortages – incentive to reduced HECS liability, focused training for backpackers, feasibility of seasonal worker or Pacific labour mobility programs
- Support of elite competitions to supporting industry champions that inspire the next generation.

Discussion topic:

- People are the key to the success of any industry. What activities should the wool industry embrace to ensure we have a skilled, vibrant and capable industry for 2030?

6. PREDATION

The AWI website⁸ says that wild dogs cost the Australian economy 66.3 million every year. The impact of wild dogs is felt across Queensland, the pastoral and now cereal zones of Western Australia, the NSW and South Australian pastoral zone, and along the Great Dividing Range in NSW and Victoria.

AWI invests in a comprehensive suite of projects in wild dog control which includes:

- Coordination and support to implement wild dog management plans
- Baiting
- Supporting woolgrower participation in wild dog advisory groups
- Training
- Research and analysis
- Practical guides to exclusion fencing.

In many areas, well designed and constructed exclusion fences have been very effective at preventing wild dogs from entering woolgrowers' properties or 'clusters' of properties, resulting in increased on-farm productivity and the ability for woolgrowers to run sheep without the stress of worrying about attacks.

Having the capacity to keep dogs out of a property or properties, and get rid of the dogs inside the fence, is the key to future long-term freedom from wild dog predation in susceptible areas.

Some of the issues raised in previous WCG meetings include:

- The need to improve data management – integrate FeralScan with other databases
- Advocate for greater government support and seek MLA partnership
- Need to have the ongoing use of all tools including 1080
- Para-aminopropiophenone (or 'PAPP') is good for some situations but not all.

Discussion topic:

- What ongoing investment should the industry make in relation to minimising the impacts of predation, especially given wool's potential comparative advantage in some areas most affected?

⁸<https://www.wool.com/sheep/pest-animals/wild-dogs-foxes-pigs/>

4. QUESTIONS FOR CONSIDERATION

Considering paper 3 (Social licence issues) as well as the opportunities and threats raised here, some overall questions for consideration are:

- Have we missed any key opportunities or threats?
- Are any of the issues covered of insufficient importance to not warrant inclusion in Wool 2030?
- Which ones are the greatest priorities?
- Should Wool 2030 consider the establishment of some carefully considered targets in respect to any of the issues raised here?



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