

CELEBRATING

50
VOLUMES

The official journal of the Geography Teachers' Association of Victoria, Inc.



INTERACTION

Volume 50 Number 3 • September 2022



Our changing landscapes

'On a national scale, Cotton Australia has written an article highly relevant to Year 9 Biomes and Food Security, summarising the cotton industry in Australia and what advancements in sustainability have been made to adapt to water scarcity, waste reduction and increasing soil health.' Danielle O'Leary, Editor.

The following appears on pages 20-24 of this publication.

Australian Cotton – carefully grown in managed environments

Cotton Australia

Cotton arrived in Australia with the First Fleet, however it was not until the 1960s that the modern Australian cotton industry began to develop with the introduction of new machinery and technology. There have been many achievements, and some setbacks, along the way. Some of the achievements have been, establishing and maintaining a leading best practices program called myBMP, driving water use efficiency and reducing pesticide use, developing a sustainability framework, facilitating environmental audits and supporting growers moving into new regions. On the downside, our growers have endured droughts and floods to issues around their social licence to operate.

More recently, international trade disruptions, increased input costs and securing a skilled workforce are concerns. Climate change will continue to be a challenge as will the public perception of the industry.

Today, Australia's cotton farmers lead the world in sustainable, ethical cotton production. Since 1992, producing a bale of irrigated cotton now takes 48 per cent less water on 34 per cent less land using 97 per cent less insecticides (<https://www.crdc.com.au/publications/australian-cotton-sustainability-report>). Approximately 90 per cent of Australia's cotton businesses are family farms, producing about 80 per cent of the crop.

The significant rainfall events of 2021/22 have seen the rivers flow again and dams fill with more water than they have had in years. The increased availability of water means the Australian cotton industry's crop forecast for the 2022 season is 5.5 million bales which will support our national economy to the tune of \$4.5 billion. While this highlights the importance of cotton production to all Australians, it is the communities in 40 rural and regional local government areas that are reliant on cotton production which underpins regional prosperity and social infrastructure in these communities. These areas include:

- ▶ central and southern Queensland
- ▶ northern, central and southern NSW
- ▶ northern Victoria
- ▶ small areas of northern Queensland, northern Western Australia and the Northern Territory.

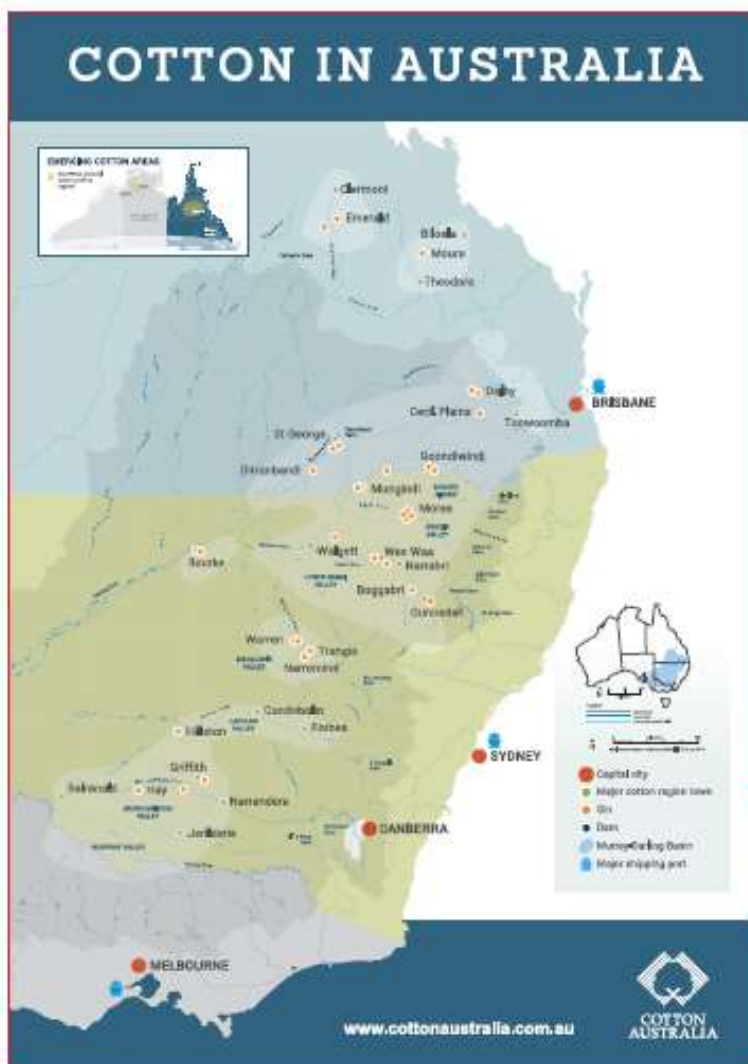


Figure 1. Cotton growing regions in Australia (<https://cottonaustralia.com.au/assets/general/Education-resources/CA-resources/Education-map-cotton-growing-in-Australia.pdf>)

The Australian cotton industry's success lies in the ongoing research and development that underpins growers' management of the crop, along with the farmers who are quick to implement change and new technology. Cotton Seed Distributors and CSIRO have been working together since 1971, with more than 100 cotton varieties released to the Australian market which underpins the production of high yielding, high quality cotton. The Cotton Research and Development Corporation (CRDC), which is jointly funded by Australian cotton growers and the Australian Government, invested \$16.9 million into 188 active projects in 2020/21, which will ensure the industry continues to adapt and remain a world leader in innovation and sustainability. Cotton Australia provides a united voice for cotton growers across research and development, stewardship, natural resource management, biosecurity, and cotton production issues. This is achieved through policy and advocacy, education, communication, and grower services. Some of our industry's current RD&E projects and our Sustainability project, 'Planet. People. Paddock', are highlighted below.

Planet. People. Paddock.

Farms are complex and interconnected ecosystems, and the Australian cotton industry has keenly focused on continuous improvement and efficiencies with sustainable and biodiverse farms becoming a key priority over the last two decades. Planet. People. Paddock. is the Australian cotton industry's sustainability framework created to coordinate a whole-of-industry strategy to manage sustainability, and to engage effectively with stakeholders on actions and progress.

Planet. People. Paddock. is currently targeted at on-farm cotton production. Through a process of consultation and review, nine topics have been assessed as being most important to customers, cotton growers and other stakeholders:

- ▶ Planet: Water, greenhouse gas emissions, pesticides, biodiversity, soil health
- ▶ People: Workplace, wellbeing
- ▶ Paddock: Productivity, profitability

<https://cottonaustralia.com.au/sustainability-reports>


	TARGETED OUTCOMES	2020/21 SUMMARY	SDG ALIGNMENT
PLANET	 Water Continuous increase in the efficiency of water used for cotton irrigation, within sustainable river & ground water system limits.	<ul style="list-style-type: none"> • Water use efficiency improved • 48% less water now needed to grow a bale of cotton compared to 1993. 	
	 Greenhouse gases Contribute to the Paris Agreement's aim of a climate neutral world.	<ul style="list-style-type: none"> • Emissions per bale estimated to have reduced 6% from the previous year 	
	 Biodiversity Native vegetation management in the cotton landscape is in line with regional priorities.	<ul style="list-style-type: none"> • 21% of an average cotton farm is remnant native vegetation 	
	 Pesticides Pesticide use supports optimal crop production while having no negative impact on human & environmental health.	<ul style="list-style-type: none"> • Insecticide hazard reduced • Herbicide hazard increased: more rain = more weeds 	
	 Soil Health Sustained cotton productivity growth by improving soil health.	<ul style="list-style-type: none"> • Soil health measures are being developed • 30% of growers use cover crops 	
PEOPLE	 Wellbeing Contribute to improved wellbeing of people living and working in cotton communities.	<ul style="list-style-type: none"> • Physical health and community involvement has increased • Mental health has decreased 	
	 Workplace Injury-free cotton farms, skills for innovative and modern agriculture, & a diverse workforce that is treated ethically.	<ul style="list-style-type: none"> • Better workplace data is a priority • Industry workplace strategy in development 	
PADDOCK	 Productivity Increase Australian cotton yield and quality within sustainable environmental boundaries.	<ul style="list-style-type: none"> • Yield increased from previous two drought years, but remains below long-term trend 	
	 Profitability Growers have sufficient profitability to confidently re-invest in their business & community.	<ul style="list-style-type: none"> • No insights on 2021 profitability due to a data lag. 	

Figure 2. Planet. People. Paddock. and the UN Sustainable Development Goals (<https://cottonaustralia.com.au/assets/general/Publications/Sustainability-Reports/Sustainability-Report-2021.pdf>)

The recently released Australian Cotton Sustainability Update (2021) shows a 3.6 per cent annual improvement in Australian cotton water use efficiency and a 6 per cent reduction in greenhouse gas emissions per bale, but also an increase in herbicide use because of a wetter season increasing the need for weed control.

Cotton Research and Development Corporation Executive Director Dr Ian Taylor said, "The current high rainfall seasons means there will almost certainly be an increase in the use of herbicides to control weeds. To minimise this, we continue our investments in Integrated Weed Management strategies – such as innovative optical sprayers and alternatives to residual herbicides – to provide environmentally sound alternative solutions to growers. And we continue to drive water-use efficiency. The industry's long-term optimisation of water use is something growers should be proud of and is consistent with the UN Sustainable Development Goal of 2 dramatically increasing water-use efficiency while ensuring sustainable withdrawals of freshwater".

Transparency and good data are critical to the industry. With this in mind, the Australian cotton industry is unveiling for the first time an innovative sustainability 'Data Pack' to support its latest cotton sustainability report. You can find this on the above link. Good, trusted data helps inform our stakeholders, and will increasingly support market access as customer and government requests grow world-wide for sustainability improvements. Building an evidence

bank of sustainability impacts also helps growers make management decisions to balance productivity improvements with environmental and social outcomes. Cotton Australia CEO Adam Kay said, "This new Data Pack is one more tool the industry has developed to allow all stakeholders to make better decisions and is further evidence of our desire to be accountable and transparent to stakeholders".

Ground-breaking circularity

Reducing waste and increasing soil health are just two of the benefits expected from a ground-breaking trial that involves spreading approximately two tonnes of shredded cotton products onto a cotton farm near Goondiwindi. It is hoped that the fabrics will break down into the soil, increasing microbial activity, locking in carbon and improving soil moisture, while also diverting cotton clothing from landfill and reducing greenhouse gas emissions. This trial is part of a partnership between circular economy specialists Coreo, the Queensland Government, Goondiwindi Cotton, Sheridan, Cotton Australia, Worn Up and CRDC. If successful, the trial could lead to large-scale recycling of cotton textiles, helping to solve the issue of textile waste and improve soil health.

<https://cottonaustralia.com.au/news/ground-breaking-trial-returning-cotton-textile-waste-to-cotton-fields-launched-in-goondiwindi>



Figure 3. Goondiwindi Circular Cotton Project.



Figure 4. Goondiwindi Circular Cotton Project.

Helping to Protect Biodiversity

Cotton Australia and Cotton Research and Development Corporation are supporting a partnership between Country Road and Landcare Australia to improve biodiversity on cotton farms in the Namoi Valley. Country Road will contribute a minimum \$600,000 to the partnership over three years, with funds raised going to Landcare Australia to support biodiversity restoration projects. The partnership will draw on a CRDC report, published under the Australian Government's National Landcare Program Smart Farming Partnership Initiative Round 1, which mapped biodiversity in Australian cotton landscapes, identified threatened and endangered species, and recommended ways to protect them.

<https://www.crdc.com.au/country-road-and-landcare-protecting-biodiversity-australias-cotton-landscapes>



Figure 5. Brooke Summers and Daniel Kahl planting trees

Activity

SOIL YOUR UNDIES

Bury a pair of cotton underpants and in just eight weeks you can get a picture of your soil health and discover for yourself how biodegradable 100 per cent cotton is.

<https://cottoninfo.com.au/soilyourundies>

Additional links:

- ▶ Cotton Info: <https://www.cottoninfo.com.au/>
- ▶ Australian Cotton Google Arts Platform: <https://artsandculture.google.com/partner/cotton-australia>
- ▶ Cotton Australia: <https://cottonaustralia.com.au/>
- ▶ Cotton Research and Development Corporation: <https://www.crdc.com.au/>

Cotton Australia is the peak body for Australia's cotton growers, representing up to 1,500 cotton farms mainly in New South Wales and Queensland, but also in northern Victoria. Cotton Australia works with growers and stakeholders to ensure the Australian cotton industry remains viable, valued and advanced. <https://cottonaustralia.com.au>

Suggested Victorian Curriculum Links

LEVEL 9–10

- Geographic knowledge
[VCGGK133](#) • [VCGGK134](#) • [VCGGK135](#) • [VCGGK136](#) • [VCGGK142](#)