

Introduction

Cotton production is an important economic activity for many agricultural communities in eastern Australia. The number of farms where cotton is planted ranges seasonally, from approximately 1,200 to 1,500, based on prevailing weather conditions. Cotton is planted on more farms in years with higher soil moisture/greater water availability. Around two thirds of Australia’s cotton is grown in the state of New South Wales, and one third in the state of Queensland. Australia’s cotton industry has benefitted greatly from innovations in plant varieties and genetic modification, opening up opportunities to expand cotton production into new locations such as far north Queensland, the Northern Territory and Western Australia, with commercial scale trials proving the agronomic viability of cotton in these areas. In 2022-23, there will be several commercial crops planted in these regions. A soon-to-be completed gin outside Katherine in the Northern Territory, and another planned for Kununurra in northern Western Australia, is expected to drive further growth in these regions.

Although a relatively minor producer on a global scale, Australia is one of the world’s largest exporters of raw cotton, with more than 99% exported annually.

Outlook for cotton supply and demand

Australian cotton production is forecast to decrease in 2022-23, following record production in 2021-22. After two years of drought in 2018-19 and 2019-20, Australian cotton production recovered strongly in 2020-21. A continuation of favourable climatic conditions and above average water availability are expected to stimulate a large planting of dryland and irrigated cotton in 2022-23 with strong yield potentials. However, yields are expected to decline slightly due to disease pressure and compaction from back-to-back large plantings. Wet conditions in major production regions may also limit growers’ ability to access fields to plant. The Australian Bureau of Agricultural and Resource Economics (ABARES) forecasts Australian cotton production in 2022-23 to decrease to 5.1 million (227 kilogram) bales (Figure 1).

Figure 1 Cotton lint production, exports and gin-gate returns, Australia, 2012-13 to 2022-23



f ABARES forecast. s ABARES estimate.

(Source: ABARES, Agricultural Commodities September Quarter 2021) Note price per bale is 2022-23 US\$

Forecast production in 2022-23

ABARES forecasts the production of Australian cotton lint to decrease to 1,146 kilotonnes in 2022-23, a 10% decrease on 2021-22 production levels. Australian cotton production is expected to remain historically high due to a continuation of favourable climatic conditions and plentiful water availability. The decrease in production from a record in 2021-22 is attributed to slightly lower yields due to increased disease pressure and soil compaction following last season's large crop, and unfavourable planting conditions in some regions. In addition, saturated soil profiles and a forecast for above average rainfall throughout the planting window may limit the area planted. Total cotton plantings are expected to cover 579,000 hectares in 2022-23, down from an estimated 635,000 hectares in 2021-22. Cotton plantings and production recovered strongly in the 2020-21 season due to the onset of La Niña climate conditions, which are associated with above average rainfall for eastern and northern Australia during winter, spring and early summer. The Australian Bureau of Meteorology recently announced a third consecutive La Niña event in addition to an ongoing negative Indian Ocean Dipole. The combination of these climatic drivers is expected to see above average rainfall across major cotton production areas over the coming months. Water storage levels across growing regions have been replenished over the past two years, leading to large, irrigated cotton plantings. Meanwhile, the forecast wet conditions will encourage increased dryland cotton plantings.

Forecast exports in 2022-23

In 2022-23, ABARES forecasts Australian cotton exports to reach approximately 1,500 kilotonnes. Delays in harvesting and exporting the record 2021-22 cotton crop has left an estimated 87% of the crop to be exported in 2022-23. A substantial 2022-23 crop will also contribute to the large export volumes. Despite a deteriorating global economic outlook, Australian cotton exports are expected to remain strong given the premium quality of Australian cotton and its current discount compared to other machine picked countries because of trade restrictions to China. Australian cotton export value is forecast to increase to A\$7.1 billion (US\$4.8 billion¹) in 2022-23, partially due to a high proportion of the 2021-22 cotton crop being forward sold when prices were significantly higher.

Forecast return to growers in 2022-23

In 2022-23, ABARES forecasts the return to Australian cotton growers to decrease to an average A\$717 (US\$491) per bale (227 kilograms), representing a 23% decrease in returns from 2021-22 due to the decline in international demand and prices.

Cotton exports

In 2021-22, Vietnam and Indonesia were the largest export destinations for Australian cotton, accounting for 41% and 20% of Australian exports, respectively. Turkey and Thailand have also become major destinations for Australian cotton

Issues facing the Australian cotton industry

Labour and skills shortage

Australian agriculture is facing ongoing skills and labour shortages largely exacerbated by the COVID-19 pandemic which reduced the number of overseas workers and placed restrictions on the movement of Australian workers. This is being felt in the cotton industry, which is facing the challenge of attracting and retaining core staff, on-farm labour (unskilled and skilled), and access to professional advisers and service providers. The remoteness of cotton farms in

¹ Based on 2022-23 currency conversion of A\$1 being equivalent to US\$0.685

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Australia also impedes recruitment due to limited access to suitable affordable accommodation and limited access to services such as childcare, education, and health.

The Australian Government is committed to building a bigger, better trained and more productive workforce, including for the agriculture sector. A Jobs and Skills Summit, held in September 2022, resulted in multiple whole-of-economy measures that will benefit the agriculture sector in the immediate and longer term. These include (please note that none of these initiatives provide government payments to farmers):

- To accelerate the delivery of 465,000 fee free Technical and Further Education (TAFE) places, with 180,000 to be delivered next year.
 - In Australia, TAFEs are Government owned vocational education and training (VET) institutions.
- An increase in the permanent Migration Program ceiling to 195,000 in 2022-23, including 34,000 places specifically for regional visas within the skill stream.
- A\$36 million (US\$24.6 million) for the Department of Home Affairs to recruit 500 staff to address the visa backlog.
- Increasing the duration of post study work rights of international students in areas of verified skills shortage to strengthen the pipeline of skilled labour in Australia
- Reforms to the VET framework to improve flexibility through micro-credentials and better inclusion of work-based learning.
 - In Australia, VET is the tertiary education pathway that provide students with qualifications between Certificate I through to Graduate Diplomas, often focused on occupational skills.
- A review of migration settings such as labour market testing and skilled migration occupation lists.

In addition to the above, the Australian Government continues to implement a range of measures under the AgATTRACT and AgFAIR initiatives, which support the agricultural sector in attracting, skilling and retaining workers. This includes the AgCAREERSTART gap year program being run by the National Farmers' Federation on behalf of the Australian Government. AgCAREERSTART is a 10-12 month gap year program designed to kickstart young people's career in farming. Cotton Australia is participating in this program.

Climate change

Australia's agriculture industries are vulnerable to the impacts of climate change – with global warming already hurting farm performance, and presenting new and significant risks to our environment, our communities, supply of products and our ability to trade, and Australia's broader economy.

Farmers recognise the risk that climate change poses to their ongoing economic viability and resilience, and many individuals and communities are adopting practices to mitigate and adapt to the impacts of climate change.

Drought preparedness

Water security is a key issue for the Australian cotton industry. Drought is a recurring feature of the Australian landscape. The impact of drought on farmers, rural communities and the national economy is likely to worsen unless farmers continue to adapt. Learning to live with and adapt to climate change, including the drought cycle, will help make agricultural production – including cotton production – more productive and profitable, better protect Australia's land and water which the industry depends on and, strengthen the rural communities that the sector supports.

Australia's climate smart initiatives for agriculture including cotton

Australian Government response to climate change

The government is supporting the agricultural sector adapt and build resilience to a changing climate while increasing productivity and profitability. Support includes:

- The A\$5 billion Future Drought Fund (US\$3.4 billion) which will help farmers and communities become more prepared for, and resilient to, the impacts of drought. This includes:
 - The A\$15 million (US\$10.3 million) Climate Services for Agriculture program to help build the drought resilience of Australian agriculture by providing accessible and relevant climate information, and
 - The A\$10 million (US\$6.8 million) Drought Resilience Self-Assessment Tool to enable farmers to assess their resilience to future drought and receive farm-scale insights and adaptation options tailored to their circumstances.
- The A\$214.9 million (US\$147.2 million) National Soil Package, which will support the implementation of the National Soil Strategy outlining how Australia will value, manage and improve its soil for the next 20 years.
- Global leadership – the Australian government is committed to active, strategic leadership in national and global contexts.
 - Australia has joined the Agriculture Innovation Mission for Climate (AIM4C). The initiative is led by the US and the UAE and is part of international efforts to increase global agricultural innovation, collaboration and research and development on climate change.
 - Australia has joined the Coalition for Sustainable Productivity Growth for Food Security and Resource Conservation.
 - Australia has signed the Global Methane Pledge to reduce methane emissions by 30% by 2030.

Water Security – Murray–Darling Basin Plan

The Murray–Darling Basin (the Basin) is one of the most important food and fibre regions in Australia, producing one-third of the national food supply and exporting produce to many other countries. In total, the Basin contains about 40% of the nation's irrigating agricultural businesses and accounts for roughly 91% of Australia's total cotton farms and cotton area.

Rainfall in the Basin is highly variable, from year to year and decade to decade. Droughts and floods are common features of the climate in the Basin.

The Australian Government's water resource management focuses on national leadership and cooperation with state and territory governments. State and territory governments have the primary responsibility to regulate and manage Australian water resources. Local government also plays a crucial role in water management, particularly managing storm water, and in some instances water supply and wastewater treatment.

In 2012, there was widespread agreement across governments that a plan was needed to manage the Basin as a connected system and protect the Basin for future generations. The Murray–Darling Basin Plan 2012 (Basin Plan) is a world-leading environmental program, which was agreed with bipartisan support in the Australian Parliament, and the support of Basin State and Territory Governments (New South Wales, Victoria, Queensland, the Australian Capital Territory and South Australia). The establishment of the Basin Plan followed several years of scientific, technical and socio-economic analysis, and extensive consultation with the public and Basin Governments. The Basin Plan aims to recover water and set some of it aside for the environment. The Basin Plan is returning the Basin to a healthier and more sustainable level,

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while continuing to support strong regional communities and sustainable food and fibre production.

For irrigation purposes, most cotton growers in the Basin have what are classified “general, or low security” water licences, meaning that they only gain access to their share of water once the needs of communities, stock and domestic use, and the environment are met.

For most users in regulated systems, water is progressively allocated by Basin state agencies as the water year (1 July to 30 June), progresses. Allocation improvements are based on climatic conditions, water in storage and the security of their water entitlements. Towards the end of the water year, Basin state agencies produce outlooks to help set expectations for users over the coming water year.

On the back of wet conditions and high storage volumes this year, allocations for many catchments and entitlement types are at or above 100%. In those catchments where allocations have yet to reach 100%, Basin state agencies are forecasting further increases over the coming months.

Floodplain harvesting is practiced in the northern Basin where cotton is grown. The Australian Government is committed to a fair and transparent process around water harvesting and water use in the Murray–Darling Basin. The New South Wales and Queensland governments are working towards licensing floodplain harvesting to ensure that water take is kept within legal limits.

Role of the Public Sector in the cotton industry

The Australian Government and cotton producers co-invest in cotton research, development, and extension (RD&E) through the Cotton Research and Development Corporation (CRDC) to deliver outcomes to benefit Australia’s dynamic cotton industry and the wider community.

CRDC is funded through a research and development levy, which all growers pay. The levy equates to A\$2.25 (US\$1.54) for each 227 kilogram bale of cotton; or A\$4.06 (US\$2.78) per tonne of exported seed cotton, with the Government matching the funds dollar-for-dollar up to 0.5% of the cotton industry’s gross value of production.

CRDC is currently working with its sister commodity Research and Development Corporations (RDCs, e.g. grains, beef, wool, sugar etc.) on a Climate Initiative, a significant co-investment program to foster thriving agriculture, fisheries and forestry industries regardless of pressures from a variable and changing climate. The initiative aims to focus investment in science and innovation at a grand scale to deliver research projects that improve the resilience of Australian agriculture to the effects of climate.

The RDC Climate Initiative has a singular focus on identifying the best ideas for transformative change that are the most desirable, the most technically feasible and the most economically viable. It will bring together the collective capacity of RDCs in a way that also is attractive for private and government investment. It will change the way the government, industry organisations and private sector work together to seize the most prospective investment opportunities.

The first investment under the Climate Initiative has commenced - Agri-Climate Outlooks- which aims to enhance seasonal outlook services and provide relevant, interpretable products and services to support better decision making and greater resilience for Australian farmers, fishers, and foresters.

Industry response to climate change

Many of Australia’s agricultural sectors have developed sustainability frameworks to guide and monitor the sustainability of industry practices into the future. Many of these frameworks outline climate goals, targets and commitments.

Improving water efficiencies in the cotton industry

From 1992 to 2019, there has been a 97% increase in the bales of cotton grown per megalitre of water (effective rain and irrigation). This equates to a 48% decrease in water required per bale of cotton. Improved water efficiencies have been achieved using a range of farming practices and development of new cotton varieties, as well as advances in water infrastructure and monitoring technologies.

Cotton farmers continue to employ techniques and measures to improve their water use efficiency, for example using canopy temperature sensors, soil moisture probes, sophisticated weather forecasting software ahead of planting, and other technologies. They also apply physical measures such as improving irrigation systems, regular laser-levelling of fields to maintain irrigation application efficiency, and applying mulching and stubble to help retain soil moisture.

The Australian cotton industry's environmental management program – *myBMP* (Best Management Practices) – includes a water management module covering water quality, efficiency of storage and distribution for both dryland and irrigated farming practices to improve farming practices and carefully manage natural resources.

Transfer of Technology

The cotton industry's joint extension program, CottonInfo, plays an important role in transferring research and development knowledge to the industry. Formed in 2012 by CRDC, Cotton Australia and Cotton Seed Distributors Ltd, the extension program is designed to improve research and development communication, improve industry responsiveness, and improve industry practices.

Cotton to Market Strategy

The world's leading brands and retailers are increasingly demanding traceable fibres produced using more responsible and sustainable methods.

Cotton Australia is the peak representative body for Australia's cotton growers. Cotton Australia is involved in several cotton programs that promote and encourage responsible and sustainable cotton production and give Australian cotton a strong position in the world fibre market. These include *myBMP* the Better Cotton Initiative (BCI), the Cotton LEADS™ program, the PLANET. PEOPLE. PADDOCK sustainability framework and Cotton Australia's supply chain marketing strategy.

myBMP is the Australian industry's voluntary farm and environmental management system and certification program that allows growers to identify and compare their practices with regulations, and industry best practice and standards. The system has 10 key modules including Human Resources and Work Health and Safety, Water Management, and Soil Health. In 2020, a total of 93 businesses and 280 farms were *myBMP* accredited representing 25% of the crop.

Cotton Australia manages the industry's relationship with Better Cotton, a global sustainability program focused on farm level improvements; *myBMP* certification standards more than exceed the requirements of Better Cotton. By opting into Better Cotton, Australian growers have access to premium markets for cotton grown on *myBMP* certified farms. BCI presents an opportunity to leverage the Australian industry's significant investment in sustainability.

PLANET. PEOPLE. PADDOCK. recognises sustainability is integral to the cotton industry's future and provides a path for the entire industry to stay in business. It sets sustainability targets, coordinates a whole-of-industry strategy to achieve these targets, and engages with growers, the wider cotton industry, cotton communities, and important community groups on actions and progress.

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The Cotton LEADS™ program, a partnership between the Australian and United States of America cotton industries, promotes the supply and use of responsibly produced cotton through national and international efforts. In 2022, there were 710 Cotton LEADS™ partners, of which six are Australian, with representation across brands, retailers, and manufacturers from 36 countries around the world.

Through the Cotton to Market strategy, Cotton Australia is also directly partnering with brands and retailers that are making Australian cotton part of their sustainable raw materials portfolios.

Cotton Australia will continue to provide feedback and create alignment between customers and industry on issues including sustainable cotton production, transparency and traceability, supply chain disruptions and human rights in order to position the industry well for the future.