



Cotton Production as a Global Economic Activity

TEACHER GUIDE

YEAR 12

This resource has been developed by:



STORM & FLOOD INDUSTRY
RECOVERY PROGRAM

Contents

NSW Curriculum Content	1
Lesson Objective	2
Lesson Overview	2
Resources and Equipment	2
Lesson Guide	3
Student worksheet 1.1	4 - 5
Student worksheet 1.2	6 - 7
Answers	8 - 11
References	12

NB: Please double click underlined text throughout the document to go directly to website link and/or page.

PIEFA'S SFIRP program is funded by the Australian and NSW Government's Storm and Flood Industry Recovery Program

AUSTRALIAN COUNCIL FOR EDUCATIONAL RESEARCH (ACER) SURVEY LINKS

- Select the teachers and career advisors [weblink](#) to complete the survey or use the QR link.
- Select the students [weblink](#) to complete the survey or use the QR link.



Your response to the survey questions will be used to continuously improve PIEFA's food and fibre education resources. Your contributions to this endeavour are greatly appreciated.

LEARNING AREAS

NSW CURRICULUM CONTENT

Learning Area | Geography | Year 12 | Stage 6

Outcomes: Evaluates responses and management strategies, at a range of scales, for sustainability. (GE-12-04)

Topic: Global Sustainability – Global Economic Activity - Agriculture

Syllabus dot points:

- evaluate the sustainability of the activity, using one or more criteria.
- examine a range of strategies for sustainability.



Cotton Production as a Global Economic Activity

Lesson objective

Students will investigate the need for monitoring and evaluating sustainability in the global economic activity of Agriculture. They will focus on a study of cotton production during which they examine a range of strategies for sustainability. Students will learn to interpret stimulus material to develop their Geographical Inquiry Skills. Students will practice and develop their writing skills to answer short answer style questions. They will develop their research and comprehension skills whilst evaluating the United Nations Sustainable Development Goal targets and indicators.

Assumed knowledge of the Global Economic Activity of Agriculture is required before undertaking these activities.

Lesson overview (1 x 1 hour lesson)

Activity 1.1 – Australia’s Cotton Growing Regions (20 mins) – Knowledge and Skills

Activity 1.2 – Strategies for Sustainability (40 mins) – Research and Comprehension

Resources and equipment

ACTIVITY 1.1 – Australia’s Cotton Growing Regions (20mins)

1. Computer/digital device access.
2. Worksheet 1.1 – Australia’s Cotton Growing Regions (Knowledge and skills activity).
3. Paper/workbook.

ACTIVITY 1.2 – Strategies for Sustainability (40mins)

1. Computer/digital device access.
2. Worksheet 1.2 – Strategies for Sustainability (Research and comprehension activity).
3. Paper/workbook.

Lesson guide

ACTIVITY 1.1 – Australia’s Cotton Growing Regions

Students will develop their geographical tools and skills by interpreting a stimulus map of Australia’s cotton growing regions. They will then respond to short answer style questions to show their understanding of the spatial distribution and locational factors relating to cotton growing regions within Australia.

1. Provide students with a printed copy or online access to **Worksheet 1.1 – Australia’s Cotton Growing Regions.**
2. Identify and discuss with students where the major cotton growing regions are located on the map. Discuss the geographical and climatic factors that characterise these regions to make them suitable for cotton production (such as proximity to a river, fertile soils, hot and dry climate with adequate rainfall).
3. Students complete short answer style questions based on the stimulus map provided.

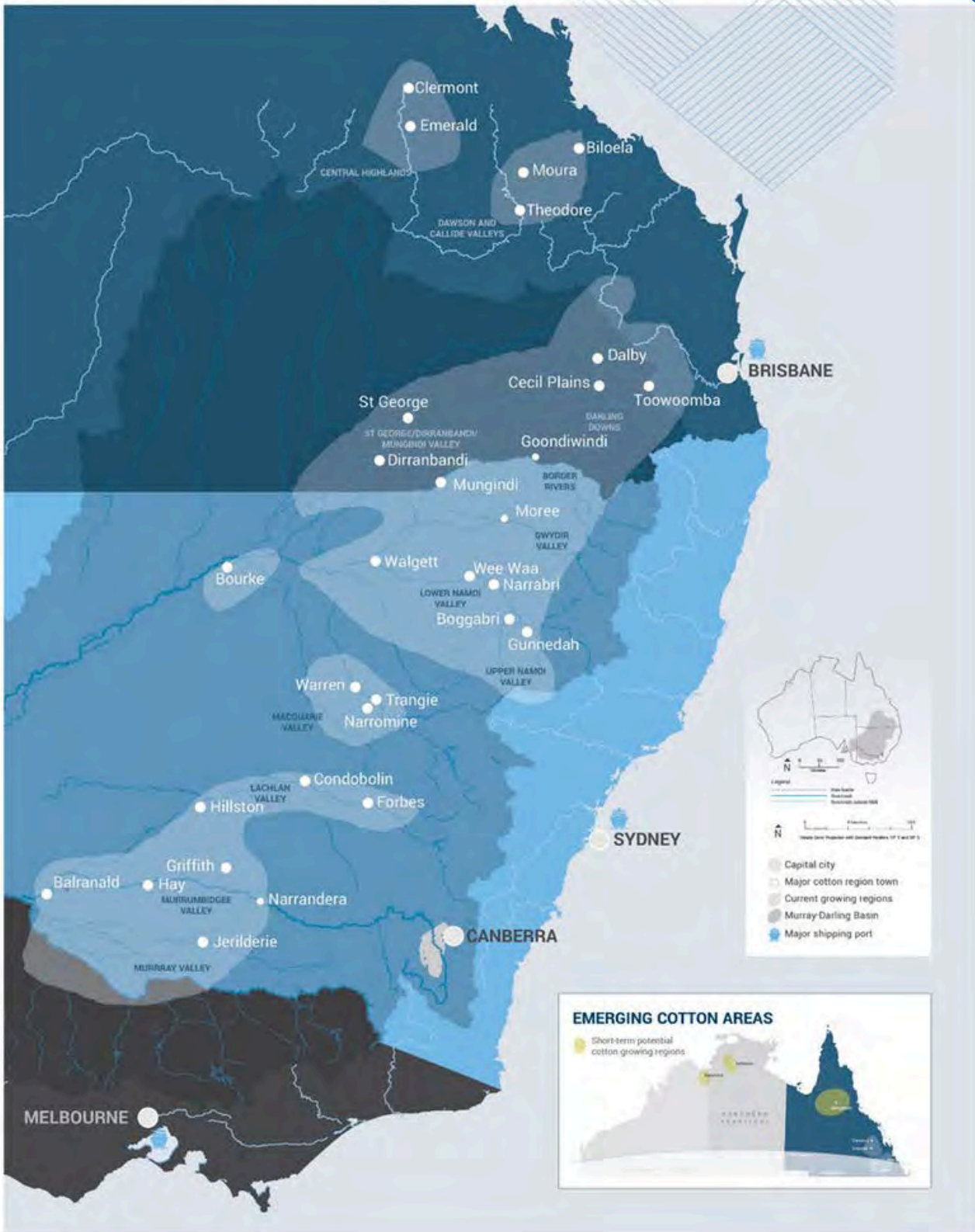
ACTIVITY 1.2 – Strategies for Sustainability

Students will research strategies for improving sustainability within the Australian cotton industry. They will tabulate their findings and provide links to specific Sustainable Development Goals. Evaluation criteria will involve using the United Nations Sustainable Development Goal targets and indicators.

1. Provide students with a printed copy or online access to **Worksheet 1.2 – Strategies for Sustainability.**
2. Students complete the table of strategies for sustainability using the links provided for each strategy. Students will read through each strategy and then fill in the table, completing a summary of each strategy.
3. Conduct a discussion with students to reflect on the strategies from their summaries. Reflection questions may include:
 - a) How might these strategies benefit farmers, consumers, and the environment?
 - b) Are there any potential drawbacks or limitations to implementing these strategies?
 - c) Which strategy would you choose to implement and why?
 - d) Which strategy would have the greatest impact on global sustainability?

WORKSHEET 1.1
(Page 1 of 2)

Australia's Cotton Growing Regions



COTTON AUSTRALIA LIMITED
www.cottonaustralia.com.au



WORKSHEET 1.1 continued
(Page 2 of 2)

Australia's Cotton Growing Regions

Use the stimulus map of Australia's Cotton Growing regions to answer the following short answer questions.

1 - Identify the spatial distribution of the major cotton growing regions in Australia. (3 marks)

2 - Account for the location of cotton growing regions within Australia, providing specific examples. (4 marks)

WORKSHEET 1.2

(Page 1 of 2)

Strategies for Sustainability in the Australian Cotton Industry

Use the links provided by the Cotton Research and Development Corporation to research each of the strategies for sustainability in the Australian cotton industry in the table below. Fill in the summary columns from the information contained on each strategy, using your own words where possible.

STRATEGY	What is the Goal of the strategy?	How will this be achieved?	Which Sustainable Development Goal does this align with?	Provide a statistic or diagram to support
<p>Reduce Greenhouse gas emissions</p> <p>https://www.crdc.com.au/sites/default/files/GHG%20-%20July%202020-3.pdf</p>				
<p>Reduce water usage</p> <p>https://www.crdc.com.au/sites/default/files/Water%20-%20July%202020-3.pdf</p>				

WORKSHEET 1.2 continued

(Page 2 of 2)

Strategies for Sustainability in the Australian Cotton Industry

STRATEGY	What is the Goal of the strategy?	How will this be achieved?	Which Sustainable Development Goal does this align with?	Provide a statistic or diagram to support
Improve Soil health https://www.crdc.com.au/sites/default/files/Soil%20health%20-%20July%202023.pdf				
Reduce pesticide use https://www.crdc.com.au/sites/default/files/Pesticides%20-%20July%202023.pdf				
Improve native vegetation https://www.crdc.com.au/sites/default/files/Native%20Vegetation%20-%20July%202023.pdf				

WORKSHEET 1.1 ANSWERS

ACTIVITY 1.1 Australia's Cotton Growing Regions

**Question 1 - Identify the spatial distribution of the major cotton growing regions in Australia.
(3 Marks)**

CRITERIA	MARKS
Recognises and names two or more major cotton growing regions in Australia. Demonstrates an understanding of the geographical spread of cotton growing areas across Australia, indicating whether they are concentrated in particular states or distributed across multiple regions.	3
Names two or more cotton growing regions or towns in Australia.	2
Provides some relevant information about cotton farming in Australia.	1

Sample answer:

The major cotton-growing regions in Australia are primarily located in New South Wales and Queensland. In New South Wales, the significant areas include the Border Rivers, Gwydir Valley, Lower Namoi Valley, Upper Namoi Valley, Macquarie Valley, Lachlan Valley, Murrumbidgee Valley and Murray Valley. In Queensland, the Central Highlands, the Dawson and Callide Valleys, the Darling Downs and the St George/Dirranbandi/Mungindi Valley regions are notable for cotton farming. These regions are mainly situated in the eastern part of Australia, particularly in areas where the climate is hot and dry and there is sufficient water for irrigation, as cotton is a water-intensive crop.

WORKSHEET 1.1 ANSWERS

ACTIVITY 1.1

Australia's Cotton Growing Regions

Question 2 - Account for the location of cotton growing regions within Australia, providing a specific example. (4 Marks)

CRITERIA	MARKS
Detailed account provided for the location of cotton growing regions within Australia. Provides a specific located example of a region. Demonstrates an understanding of the geographical factors needed for cotton farming in Australia.	3 - 4
States one or more reasons for the location of cotton growing regions within Australia. May provide a relevant example.	2
Provides some relevant information about cotton farming in Australia.	1

Sample answer:

Cotton growing regions in Australia are primarily located in NSW and Queensland as these areas have a hot and dry climate, adequate water supply for irrigation, and fertile soils. One example of a cotton growing region in New South Wales is the Murrumbidgee Valley, which is located south west of Sydney and west of Canberra. Griffith and Hay are towns located within this region. The Murrumbidgee Valley benefits from its fertile soils and access to water from the Murrumbidgee River and its tributaries. Thus making it an ideal location for cotton farming with Australia.

WORKSHEET 1.2 ANSWERS

ACTIVITY 1.2 | Strategies for Sustainability

STRATEGY	What is the Goal of the strategy?	How will this be achieved?	Which Sustainable Development Goal does this align with?	Provide a statistic or diagram to support
Reduce Greenhouse gas emissions	To contribute to the Paris Agreement's aim of a climate neutral world by reducing the emissions released in cotton production while sustaining carbon in the soil and vegetation on cotton farms.	<ol style="list-style-type: none"> 1. Improve nitrogen use efficiency. 2. Increase adoption of enhanced fertilisers. 3. Reduce energy emissions from fuel and electricity use. 4. Increase carbon sequestration and storage on farms. 	SDG 13: Take urgent action to combat climate change and its impacts.	A range of statistics or diagrams may be provided based on student choice.
Reduce water usage	To increase the efficiency of water used for cotton irrigation, within sustainable river and groundwater system and plant physiology limits.	Continued adoption of practices to: <ol style="list-style-type: none"> 1. reduce losses in storage and transmission 2. improve efficiency in application. ie/irrigation management. 	SDG 6: Clean water and sanitation: 6.4: Substantially increase water use efficiency and ensure sustainable withdrawals of freshwater.	A range of statistics or diagrams may be provided based on student choice.
Improve soil health	Deliver sustained cotton productivity growth by improving soil health.	<ol style="list-style-type: none"> 1. Encourage greater adoption of practices that give food and shelter to soils. 2. Research which practices have the greatest impact on soil properties and functions. 	SDG 2: Zero Hunger: 2.4: Implement resilient agricultural practices that increase productivity, help maintain ecosystems, strengthen capacity for adaptation to climate change, and improve land and soil quality.	A range of statistics or diagrams may be provided based on student choice.

WORKSHEET 1.2 ANSWERS

ACTIVITY 1.2 | Strategies for Sustainability

STRATEGY	What is the Goal of the strategy?	How will this be achieved?	Which Sustainable Development Goal does this align with?	Provide a statistic or diagram to support
Reduce pesticide use	Pesticide use that supports optimal crop production while having no negative impact on human and environmental health.	<ol style="list-style-type: none"> 1. More tools (new technologies, targeted application, new crop protection methods) 2. R&D for better decision-making 3. Extension of tools and decision-making to growers. 	SDG 12: Responsible Production and Consumption: 12.4: Achieve the environmentally sound management of chemicals and significantly reduce their release to air, water and soil.	A range of statistics or diagrams may be provided based on student choice.
Improve native vegetation	Improve remnant native vegetation condition on cotton farms.	<ol style="list-style-type: none"> 1. Consistent indicators and cost-effective but robust data collection. 2. Regionally appropriate native vegetation targets aligned to regional NRM plans. 3. Coordinated support for farmers to enhance native vegetation. 	SDG 15: Life on Land: 15.5 Reduce the degradation of natural habitats, halt the loss of biodiversity and prevent the extinction of threatened species.	A range of statistics or diagrams may be provided based on student choice.

REFERENCES

Cotton Production as a Global Economic Activity

Altieri, M. A. (2019). *AGROECOLOGY : the science of sustainable agriculture*, second edition. Florida: CRC Press.

Australian Farm Institute. (2022). *The Australian Agricultural Sustainability Framework*. Australian Farm Institute. <https://www.farminstitute.org.au/the-australian-agricultural-sustainability-framework/>

Cotton Australia. (n.d.). *Cotton Australia | Sustainability*. Cotton Australia. <https://cottonaustralia.com.au/sustainability>

Cotton Australia. (2022, October 20). *Explained: Sustainability in the Australian cotton industry*. In Youtube. <https://www.youtube.com/watch?v=6Q4czBgq8K0&list=UUcTsQcz7PRPX1bl3J3ORv-g&index=34>

Cotton Research and Development Corporation. (2023). *Circularity: Advocating for sustainability Billion dollar cost of invasive weeds Growing together with grains*. <https://www.crdc.com.au/sites/default/files/pdf/Spotlight%20Summer%202023-24.pdf>

Cottoninfo. (n.d.-a). *Soil health | CottonInfo*. Cottoninfo.com.au. <https://cottoninfo.com.au/soil-health>

Cottoninfo. (n.d.-b). *Soil your undies! | CottonInfo*. Cottoninfo.com.au. Retrieved January 31, 2024. <https://cottoninfo.com.au/soilyourundies>

NSW Education Standards Authority. (2019). *Glossary of Key Words | NSW Education Standards*. Nsw.edu.au. <https://educationstandards.nsw.edu.au/wps/portal/nesa/11-12/hsc/hsc-student-guide/glossary-keywords>

National Farmers' Federation. (n.d.). *Sustainability Initiatives*. Retrieved January 9, 2024. <https://nff.org.au/policies/environment/sustainability-initiatives/>

Wezel, A., Casagrande, M., Celette, F., Vian, J.-F., Ferrer, A., & Peigné, J. (2013). *Agroecological practices for sustainable agriculture. A review*. *Agronomy for Sustainable Development*, 34(1), 1–20. <https://doi.org/10.1007/s13593-013-0180-7>