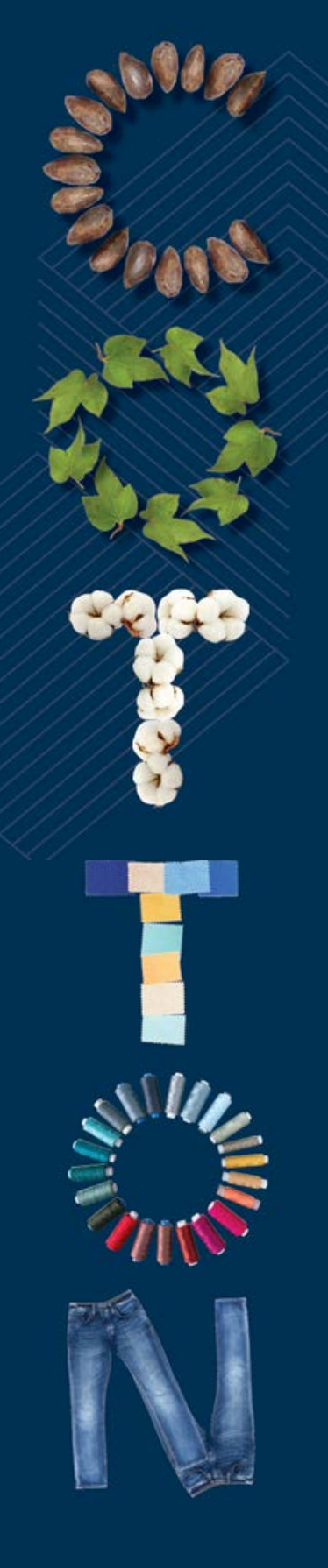


Sustainable Practices

on a Cotton Farm



Lesson & Activity Guide
Years 3 to 6
Design and Technologies,
and Science



Sustainable Practices on a Cotton Farm

Overview

Australian Curriculum Content Years 3 – 6

Design and Technologies

- Examine design and technologies occupations and factors including sustainability that impact on the design of products, services and environments to meet community needs (AC9TDE4K01)
- Describe the ways of producing food and fibre (AC9TDE4K03)
- Explain how people in design and technologies occupations consider competing factors including sustainability in the design of products, services and environments (AC9TDE6K01)
- Explain how and why food and fibre are produced in managed environments (AC9TDE6K03)

Science

- Identify sources of water and describe key processes in the water cycle, including movement of water through the sky, landscape and ocean; precipitation; evaporation; and condensation (AC9S4U02)
- Examine the properties of natural and made materials including fibres, metals, glass and plastics and consider how these properties influence their use (AC9S4U04)
- Examine how particular structural features and behaviours of living things enable their survival in specific habitats (AC9S5U01)

Lesson Objective

Students will examine sustainability in the Australian cotton industry by exploring three key areas through video observations and worksheet activities. They will also meet some cotton growers who use sustainable practices and use their creativity to recount sustainable practices. Additionally, students will gain insights into the properties of cotton fibre and express this understanding by crafting an informative and visually appealing bookmark.

Lesson Overview

Activity 2.1 – Environmental, Social, and Economic Sustainability (30 mins)

Activity 2.2 – Case Studies in Sustainability (20 mins)

Activity 2.3 – Characteristics of Australian Cotton (30 min)

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Sustainable Practices on a Cotton Farm

Resources & Equipment

Activity 2.1 – Environmental, Social, and Economic Sustainability

1. **Worksheet 2.1a – Environmental, Social, and Economic Sustainability** (Matching activity)
2. [The Australian Cotton Industry: 360-degree video](#) (3:34 min.)
3. **Worksheet 2.1b – On-Farm Sustainability in Australia** (Literacy activity).
4. [Australian Cotton, from Seed to Sock](#) (6:12 min.)

Activity 2.2 – Case Studies in Sustainability

- **Worksheet 2.2a – Sustainability in Action** (Recount activity)
- [Andrew Watson, cotton grower](#) (1:16 min.)
- [Sam Coulton Ch10 News – circularity](#) (1:49 min.)

Activity 2.3 – Characteristics of Australian Cotton

1. Various items of 100% cotton clothing or pieces of fabric.
2. **Worksheet 2.3a – Sustainable Cotton** (Literacy activity).
3. **Worksheet 2.3b – Sustainable Cotton Bookmarks** (Summary activity).
4. Thin cotton macrame rope (2 m per student), keyring, wooden bead (one per student).
5. Scissors, masking tape, hole punch.

Other Resources

- [A SUSTAINABLE COTTON INDUSTRY](#)
- [Goondiwindi Circular Cotton Project delivers promising results](#) (1:54 min.)

ATTRIBUTION, CREDIT & SHARING



This resource was produced by Primary Industries Education Foundation Australia (PIEFA) in collaboration with Cotton Australia. Primary Industries Education Foundation Australia's resources support and facilitate effective teaching and learning about Australia's food and fibre industries. We are grateful for the support of our industry and member organisations for assisting in our research efforts and providing industry-specific information and imagery to benefit the development and accuracy of this educational resource.



While reasonable efforts have been made to ensure that the contents of this educational resource are factually correct, PIEFA, and Cotton Australia do not accept responsibility for the accuracy or completeness of the contents and shall not be liable for any loss or damage that may be occasioned directly or indirectly from using, or reliance on, the contents of this educational resource.



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Sustainable Practices on a Cotton Farm

Environmental, Social and Economic Sustainability

Lesson Guide for Activity 2.1



Students will explore the three areas of sustainability and their relevance to the Australian cotton industry through the observation of videos and the completion of worksheets.

a) Write the word 'Sustainability' on the board or in a central area and encourage students to discuss what the term means and record a definition as a class. Introduce the three types of sustainability: environmental, social, and economic sustainability, and recognise that individuals and industry should strive to balance all three for overall sustainability. (Answers page 7)

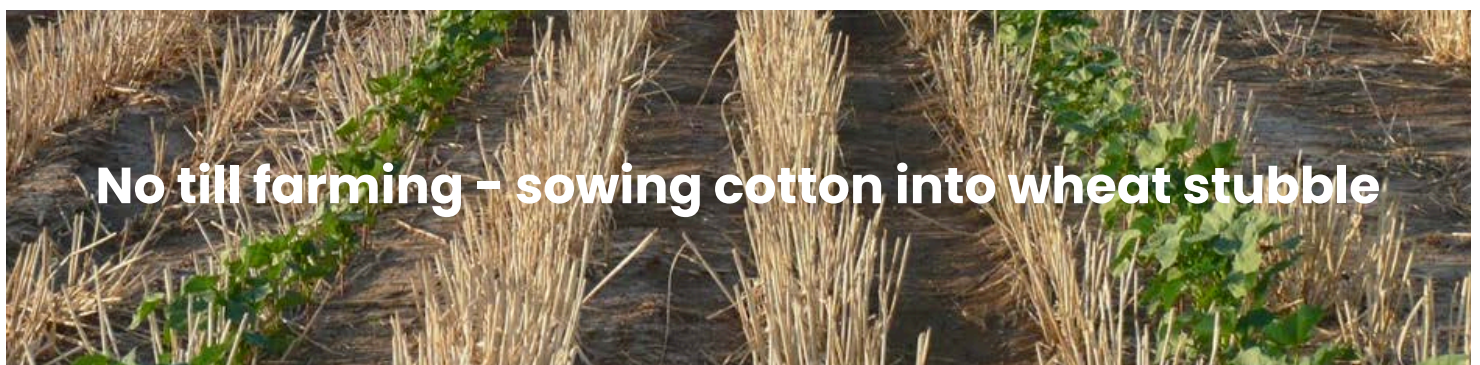
b) Distribute **Worksheet 2.1a - Environmental, Social, and Economic Sustainability** (Matching activity). Students match the type of sustainability (environmental, social, and economic) with the correct definition by drawing a line from the sustainability type to its definition. Alternatively, students can use coloured pencils to shade the sustainability type and definition with matching colours.

c) View the video [The Australian Cotton Industry: 360-degree video](#) (3:34) to explore how an Australian-owned cotton farm focuses on sustainability. The video may be viewed individually by students or projected and shown to the class. The computer mouse can be used to pan and tilt the perspective, exploring different angles within the video.

d) Distribute **Worksheet 2.1b - Sustainability on Australian Cotton Farms** (Literacy activity). Students categorise the sentences outlining an aspect of sustainability on a cotton farm into one of the three areas of sustainability. They may write each sentence in the relevant column or draw/cut and paste images depending on student abilities. (Answers page 7)

e) Students rewatch the video (if necessary) [The Australian Cotton Industry: 360-degree video](#) (3:34) and add sentences outlining any other areas of sustainability to **Worksheet 2.1b - Sustainability on Australian Cotton Farms** (Literacy activity).

f) View [Australian Cotton, from Seed to Sock](#) (6:12) to see how a pair of Australian cotton socks are made from the cotton harvested from a farm. Students add any sustainable practices mentioned in the video in the wider cotton industry (off the farm) and categorise them into one of the three areas of sustainability, adding them to the table on the worksheet.



Sustainable Practices on a Cotton Farm

Case Studies in Sustainability

Lesson Guide for Activity 2.2

Students will explore the sustainable practices and innovations employed by the Australian cotton producers through watching video case studies showcasing sustainability in action on local cotton farm. They will engage their creativity to recount the sustainable practices highlighted in the case studies.

a) Distribute **Worksheet 2.2a - Sustainability in Action** (recount activity) and view the video case studies as a class or individually. Ask students to use the notes area on the worksheet to write down any important sustainable processes each producer used on their cotton farm.

1. [Andrew Watson, cotton grower](#) (1:16)
2. [Sam Coulton Ch10 News - circularity](#) (1:49)

b) Tell the students to picture themselves having a conversation with each cotton producer. On pages two and three of the **worksheet**, instruct the students to write down what they believe the producer might say if they were describing how their cotton farm practices sustainability. Remind them to use speech marks when writing the imagined dialogue. If needed, they can add more speech bubbles to express additional ideas. (Answers page 8)



Sustainable Practices on a Cotton Farm

Characteristics of Australian Cotton

Lesson Guide for Activity 2.3

Students will discover the characteristics of cotton fibre and craft an informative and decorative summary bookmark featuring information about the properties of cotton.

a) Revise the difference between natural and made/synthetic fibres from Lesson One. Natural materials come from the environment, such as plants and animals (e.g. cotton, wool, silk, linen, leather, hemp, bamboo) whereas made materials are those that are manufactured or created by humans and are petroleum-based (e.g. polyester, nylon, spandex, rayon (semi-synthetic), acrylic, microfiber, elastane etc.).

b) Facilitate a discussion on the 'properties' or 'characteristics' of cotton. Recall the look and feel of cotton fabric in the previous lesson, allowing students to handle the cotton clothing from Lesson One. (Answers page 9)

c) Distribute **Worksheet 2.3a - Sustainable Cotton** (Literacy activity) and support students in reading the information summarising the properties and sustainability of Australian cotton.

d) Students use this information and what they have learned in the lesson to design a bookmark using pictures and information about the properties and sustainability of cotton in Australia on **Worksheet 2.3b - Sustainable Cotton Bookmarks** (Summary activity).

e) Students make a cotton tassel to decorate the top of the bookmark or watch the video [Easy Macrame for Beginners](#) (8:56) from 0:00–3:00 and make a cotton macrame decoration for the top. Punch a hole in the top of the bookmark to attach.





Sustainable Practices on a Cotton Farm

Answers



ACTIVITY 2.1 – Sustainable Australian Cotton

a) Sustainability addresses the ongoing capacity of Earth to maintain all life. Sustainable patterns of living meet the needs of the present without compromising the ability of future generations to meet their needs. (ACARA, 2022) Sustainability can be divided up into three areas: environmental, social, and economic sustainability.

Worksheet 2.1a – Environmental, Social, and Economic Sustainability (Matching activity)

- Environmental: Practices that conserve natural resources and protect ecosystems now and in the future.
- Social: Practices that contribute to the well-being of the community, workers, and society as a whole.
- Economic: Practices that maintain profitability and contribute to the financial viability of the industry.

Worksheet 2.1b – Sustainability on Australian Cotton Farms (Literacy activity)

Environmental Sustainability	Social Sustainability	Economic Sustainability
Since 1992, Australian cotton farms use 97% less insecticides.	The average Australian cotton farm creates jobs for eight people.	Reducing costs of fertilisers, pest control, and water results in greater profits for producers.
The rotation of crops after harvesting cotton retains moisture and improves the soil.	The majority of Australian cotton farms are family-owned.	
Native vegetation is maintained to encourage biodiversity, which also helps with natural pest control.	Cotton farms are safe workplaces.	
Cotton producers use technology such as soil moisture probes so crops are only watered when needed.		
Since 1992, water use productivity by producers has improved by 52%.		

Students will also add additional dot points from the two videos to the columns above.



Sustainable Practices on a Cotton Farm

Answers - continued



ACTIVITY 2.2 - Case Studies in Sustainability

Worksheet 2.2a - Sustainability in Action (Recount activity) Answers will vary, but may include responses such as:

- "I use crop rotation to keep my soil healthy"
- "On my farm I use nature to help manage the pests that destroy my cotton plants."
- "Planting trees creates a strip where native insects, birds, and bats live and they eat the pests that damage my cotton so I don't need to use chemical sprays"
- "I water my cotton crop with just enough water – no more than it needs"
- "I add cotton textile waste from clothes on to my cotton plants"
- "Did you know that I am trying to help the textile waste problem by putting small pieces of old cotton clothes on my cotton crop? This stops them from going into landfill and recycles their nutrients back into the soil"





Sustainable Practices on a Cotton Farm

Answers - continued



ACTIVITY 2.3 - Characteristics of Australian Cotton

a) The properties of cotton refer to the distinctive characteristics or qualities that describe cotton fibres. These properties influence how and why cotton is used.

The properties of cotton include:

Cotton Property	Description
Softness	Cotton fibres are naturally soft to the touch, making cotton a comfortable and pleasant material for clothing, bedding, and other textile products.
Breathability	Cotton has good breathability, allowing air to circulate through the fabric. This property makes cotton garments comfortable to wear in warm weather.
Absorbency	Cotton fibres have high absorbency, meaning they can absorb and hold a significant amount of moisture. This property makes cotton towels, bathrobes, and other absorbent products highly effective.
Durability	Quality cotton is known for its strength and durability, providing resilience to wear and tear. High-quality cotton fabrics tend to withstand repeated washing and usage (e.g. denim jeans).
Versatility	Cotton is a versatile material that can be woven or knitted into various fabric types, from lightweight and breathable to heavy and durable. This versatility allows for a wide range of applications in the textile industry.
Biodegradability	Cotton fibres are biodegradable, meaning they can naturally break down over time, contributing to environmental sustainability when disposed of.
Thermoregulation	Cotton has the ability to regulate temperature, providing warmth in cool conditions and coolness in warmer conditions. This thermoregulatory property enhances the comfort of cotton clothing.
Hypoallergenic	Cotton is generally hypoallergenic and less likely to cause allergic reactions and is suitable for sensitive skin.

Sustainable Practices on a Cotton Farm

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1 kg

OF AUSTRALIAN
COTTON LINT CAN
PRODUCE...



5.3
T-SHIRTS



19
PAIRS OF SOCKS



1.1
PAIRS OF JEANS



Environmental, Social and Economic Sustainability

Student Worksheet 2.1a



There are three main types of sustainability. Sustainability in agriculture involves balancing economic success with social and environmental responsibility. The Australian cotton industry continues to work towards achieving a balance to ensure the long-term viability of cotton farming in the country.

Match the type of sustainability with its definition.

Environmental



Practices that contribute to the well-being of the community, workers, and society as a whole.

Social



Practices that maintain profitability and contribute to the financial viability of the industry.

Economic



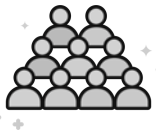
Practices that conserve natural resources and protect ecosystems now and in the future.



Categorise the sentences below into the appropriate column based on whether they represent environmental, social, or economic sustainability.



a) Cotton producers use technology such as soil moisture probes, so crops are only watered when needed.



b) The average Australian cotton farm creates jobs for nine people.



c) Since 1992, water use productivity by producers has improved by 48%.



d) Cotton farms are safe workplaces.



e) Native vegetation is maintained to encourage biodiversity, which also helps with natural pest control.



f) The rotation of crops after harvesting cotton retains moisture and improves the soil.



g) The majority of Australian cotton farms are family-owned.



h) Since 1992, Australian cotton farms use 97% less insecticides.



i) Reducing costs of fertilisers, pest control, and water results in greater profits for producers.



Record any sustainable practices viewed in the video [Australian Cotton, from Seed to Sock](#) (6:12) in the wider Australian cotton industry. Categorise them into one of the three areas of sustainability and add them to the table below.

Environmental Sustainability	Social Sustainability	Economic Sustainability



Sustainable Practices on a Cotton Farm

Sustainability in Action

Student Worksheet 2.2a



Watch the video case studies to learn about the sustainable practices and innovations of some Australian cotton producers. As you watch, take some notes on what the producer is doing on their farm to improve their sustainability.



1 [Andrew Watson, cotton grower](#) (1:16)

Notes:



2 [Sam Coulton Ch10 News - circularity](#) (1:49)

Notes:





Sustainable Practices on a Cotton Farm

Sustainability in Action

Student Worksheet 2.2a



Imagine each cotton producer was talking to you. Write what you think they would say to you, explaining what their cotton farm is doing to be sustainable. Add more speech bubbles if you need them.

1

Andrew Watson

“I use crop rotation to keep my soil healthy.”





Sustainable Practices on a Cotton Farm

Sustainability in Action

Student Worksheet 2.2a



Page 3 of 3

Imagine each cotton producer was talking to you. Write what you think they would say to you, explaining what their cotton farm is doing to be sustainable. Add more speech bubbles if you need them.

2

Sam Coulton

Four large, empty speech bubble outlines are arranged in two columns. The top row has two bubbles, and the bottom row has two bubbles. Each bubble is a simple black outline with a tail pointing downwards and to the right.



Read the passage below and use the information to make a bookmark on the properties and sustainability of cotton in Australia.



Australian cotton produces a **soft** and **comfortable** fibre, making it ideal for textiles like clothing, bedding, and towels. Australian cotton is known for its **high quality**, characterised by **long and fine fibres**. Cotton fibre has a wax coating and is thin and hollow like a straw, making it **moisture-wicking** and **breathable**. The qualities of Australian cotton are appreciated in the textile industry, making it a sought-after material, and the high demand for cotton products supports the economic sustainability of cotton production.



Cotton is a **natural, plant-based** fibre that is **biodegradable**. When disposed of, cotton products break down over time, reducing their environmental impact compared to made or synthetic materials that may stay in the environment for many years.



One of the reasons why Australian cotton is sustainable is because it comes from a **renewable resource** – the cotton plant. Producers can grow more cotton crops without depleting natural resources.





Sustainable Cotton

Student Worksheet 2.3a



Farmers in Australia use sustainable practices to grow cotton. They focus on managing water efficiently, employing advanced technology (such as water sensing probes) and techniques if irrigation is used, ensuring that the cotton only uses the amount of water it needs, and minimising waste.



Australian cotton farming promotes biodiversity conservation by preserving native vegetation, implementing wildlife-friendly practices, and protecting habitats. This helps maintain a balanced ecosystem on cotton farms and provides natural pest control. Pest management strategies are implemented to reduce the need for chemical pesticides. This helps protect the environment and maintain a balanced ecosystem on cotton farms.





Sustainable Practices on a Cotton Farm

Sustainable Cotton Bookmarks

Student Worksheet 2.3b



Cut out the larger rectangle and fold down the centre to create a bookmark.

Make a bookmark about sustainability in the cotton industry on one side of the bookmark and the characteristics of cotton on the other.

Make a cotton tassel or macrame to decorate the top.

