

SCIENCE AND AGRICULTURE

# STEM CHALLENGE

A PIEFA MEMBERS COLLABORATION



FOR  
YEAR 6

COTTON AUSTRALIA  
FROM SEED TO SOCK



Primary Industries Education  
Foundation Australia



# TEACHER OVERVIEW

## FROM SEED TO SOCK



Year: Year 6

### Outcomes:

The growth and survival of living things are affected by physical conditions of their environment (ACSSU094).

Sudden geological changes and extreme weather events can affect Earth's surface (ACSSU096).

### Introduction:

The following activities focus on the need for water sharing within the cotton industry and involve students in a range of engaging activities, including concept cartoons, circles of concern, multimedia clips and games.

### Tasks:

#### **Activity One: Multimedia Clip - From Seed to Sock**

Students will watch a video focused on the steps of turning fibre into a final product, and complete targeted questions responding to the video.

#### **Activity Two: Circle of Concern and Concept Cartoons - Water sharing**

Students will engage in a brainstorming session, sharing their knowledge about issues related to water in the environment. Students will record information using a 'Circle of Concern Strategy' and work as a group to discuss how these issues can be addressed, managed or solved. Students will conclude this activity by completing a 'Concept Cartoon'.

#### **Activity Three: Create and participate in a water-sharing game**

Students will observe a multimedia clip demonstrating how water is being used and shared more effectively in the cotton industry. Students will then participate in a hands-on game focused on water allocation within the environment. Finally, they will be given the opportunity to design and present their own simplified water-sharing game to Stage One students in their school.



# TEACHER INFORMATION

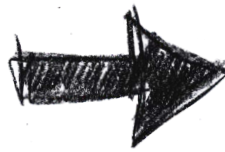
## FROM SEED TO SOCK

### Introduction:

- Cotton is a natural fibre that grows on a plant. It is primarily grown in New South Wales and Queensland.
- Approximately 90% of Australia's cotton businesses are family farms.
- Australia's cotton industry is one of the most water-efficient cotton industries in the world.

### Activity One: From Seed to Sock

Producing a pair of socks from a cotton plant involves a number of steps, processes and people.



a) Provide students with the worksheet, and assist students with completing question 1. Read through the remaining questions (2-10) to determine the information that needs to be recorded during and after the video.

Source: [Australian Cotton From Seed to Sock Video Worksheet](#)

URL: <https://cottonaustralia.com.au/assets/videos/Seed-to-Sock-Video-Worksheet.pdf>

b) View the video:

Source: [Australian Cotton, from Seed to Sock](#)

URL: <https://www.youtube.com/watch?v=t6plTYrBth4>

c) Facilitate a discussion to answer questions 2 to 10 as a class.

TEACHER INFORMATION

# FROM SEED TO SOCK

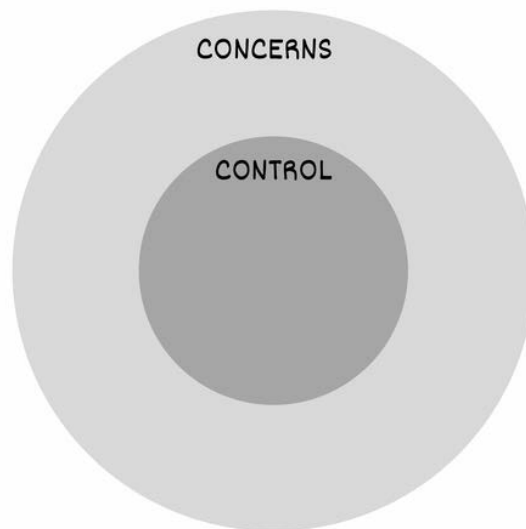
## SHARING WATER IN THE ENVIRONMENT

### Activity Two:

For a cotton plant to be productive during its life cycle, it requires water. This is part of its physical environment. It is therefore important to understand how water is allocated within the cotton industry.



- a) Discuss with students, the concerns they are aware of surrounding water use and availability in Australia. Use a 'Circle of Concern' strategy to record responses (outer circle). Ideas may include: availability, drought, floods, contamination (pollution, plastics, chemicals), erosion, salinity, etc.
- b) Within the control circle (the inner circle), discuss and record ways that the concerns may be managed or addressed. Ideas may include: Soil moisture probes, best irrigation system for a property, on-farm weather stations etc.



- c) Using the ideas from the Circle of Concern activity, students can now complete the next activity: Sharing Water in the Environment Concept Cartoon.

STUDENT ACTIVITY

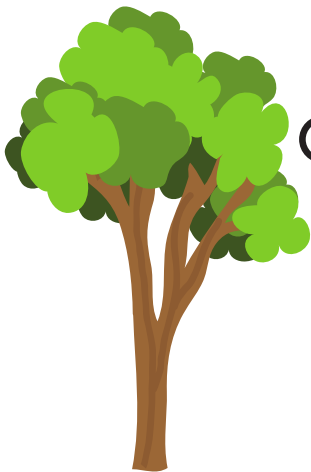
# FROM SEED TO SOCK

## SHARING WATER IN THE ENVIRONMENT

Create a Concept Cartoon

What could each of these organisms/people/groups be thinking about water in the environment? Fill in the thought clouds.

Will there be enough water so I can grow, survive, and provide oxygen?



TEACHER INFORMATION

# FROM SEED TO SOCK

## SHARING WATER IN THE ENVIRONMENT

### Activity Three:

a) As a class, watch the video on Water Allocations to gain an understanding of how water is shared in communities that produce cotton.

Source: [Cotton Explained: Water Allocations \(1.17\)](#)

URL: [https://youtu.be/-\\_4I5GDUTLO](https://youtu.be/-_4I5GDUTLO)

b) Ask students to create a list of water improvements over the last 30 years within the cotton industry.

*(Answers: measure and recycle the water; only irrigate when the plants really need it; abide by rules that make sure water is divided fairly; choose crops carefully to match the water levels).*

In groups, students will create their own water-sharing game based on the model of the Murray Darling Basin Authorities Game. Students will design a game so that they can teach/demonstrate water sharing in the cotton industry to Stage One students and also allow them to interact, present and engage with students within their school.

c) Facilitate the different versions of the game with students. Equipment and instructions are detailed in the link.

Source: [The Water Sharing Game - Murray Darling Basin Authority.](#)

URL: <https://www.mdba.gov.au/education/resources/water-sharing-game>

d) Provide students with the challenge of creating their own version of the game for Stage One students based on the Water Allocations In Cotton video. *(Students may need to re-watch the video a few times to design their game).*

e) Distribute the Task and Planner Worksheets to groups to support their design and planning.

STUDENT CHALLENGE

# CREATE YOUR OWN COTTON WATER SHARING GAME



## TASK

In groups, create your own water sharing game for Foundation/Year 1/Year 2 students, based on the sources linked above:

1. Cotton Explained: Water Allocations
2. The Water Sharing Game - Murray Darling Basin Authority

- a) Your game needs to have clear steps and also pictures to help students who are unable to read yet!
- b) You will need to write up a plan that demonstrates how water is allocated to rivers and wetlands, communities and cotton farmers when there is good rainfall and a full dam.
- c) You also have the extra challenge of demonstrating what might happen if there is a drought.

Use the Planner Worksheet to help you design your game.

STUDENT CHALLENGE

# CREATE YOUR OWN COTTON WATER SHARING GAME



## PLANNER 1

**Step One:** Write a list of equipment you will need for your demonstration.

**Step Two:** Name your main source of water (jug label):

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**Step Three:** List the 3 places that water needs to be shared between (these will be the labels on your cups).

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*(You will need to design a picture to represent each of these "stakeholders" to stick to your cups).*



STUDENT CHALLENGE

# CREATE YOUR OWN COTTON WATER SHARING GAME



## PLANNER 2

**Step Four:** Write a set of instructions to explain how to play the game/perform the demonstration.

**Step Five:** Add a set of instructions detailing how to change the game/demonstration if there is a drought.

**Step Six:** Perform a trial of your game/demonstration and make any changes that are needed before you play it with others in your school.

STUDENT CHALLENGE

# CREATE YOUR OWN COTTON WATER SHARING GAME



## Reflection

### Question One:

Do you think that the younger students understood more about water sharing on cotton farms after they saw you demonstrate the game to them?

### Question Two:

Did you need to make any changes to your game when you did a trial run?

### Question Three:

What improvements could you make to your game/demonstration?