

SCIENCE
Stage 3 Living World

Sustainably managing environments
to source food and fibre

How to conserve water and make
simple hydroponics to
produce food



This resource supports the Georges Riverkeeper Stage 3 Education Module 2: Virtual Water

Outcome: Explains how food and fibre are produced sustainably in managed environments for health and nutrition ST3-5LW-T

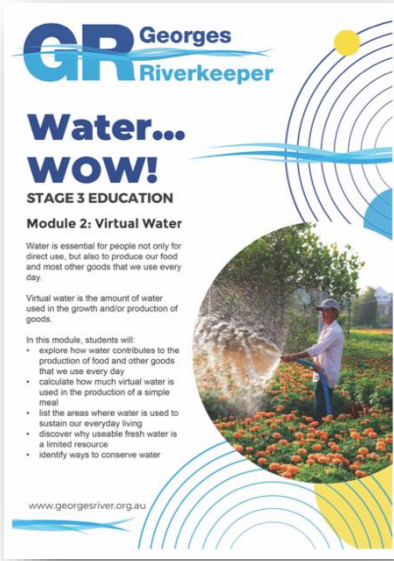
Focus Question: Why is it important for food and/or fibre to be produced sustainably?

Learning Intentions: I understand how water contributes to food production. I can explain how food can be grown sustainably. I understand how Aboriginal people produce food from sustainably managed environments.

Success Criteria: I can use less water at home and at school. I can successfully grow food using simple hydroponics.

Overview:

The Georges River has been a source of food for Aboriginal people for thousands of years. Food such as fish, eels and shellfish were plentiful along the Georges River, and Aboriginal people, such as [Biddy Giles](#), knew how to sustainably harvest these foods and shared this knowledge. With the increased competition for water in the Georges River, access to fresh clean water in the increasingly urbanised catchment is becoming a priority, especially during the recent drought. We need be able to produce food and conserve fresh water by using it more sustainably and reducing the amount of pollutants from entering it. Innovation will be the solution. The three activities outlined are aimed to show how food production can be sustainably managed while conserving water.



Aboriginal and Torres Strait Islander Histories and Cultures

Sustainably managed environments

Aboriginal people have practiced sustainably managed food production along rivers for thousands of years. Using fish traps is a way of catching fish in rivers and keeping the fish alive.

Georges River Fish Traps

Aunty Margaret Foat of the Bankstown Koori Elders Group has created this wonderful artwork of an Aboriginal fish trap out of clay. The artwork is finished in a green glaze. Aunty Margaret explained that once the fish entered the trap it would get caught by its gills. They would only take what they could eat for that meal so they would not waste food. The other artwork in the photo is a replica coolamon made out of clay. This coolamon depicts local grubs.



Brewarrina Fish Traps

The Ngemba people of Brewarrina used their advanced knowledge of river hydrology and fish ecology to trap and catch large numbers of freshwater fish. The unusual and innovative fish traps, known as Ngunnhu, are still visible in the Darling River, and have strong social, cultural and spiritual association for Aboriginal people with connections to the area ([source](#)). See the video on the [Brewarrina Fish Traps](#). Photo [source](#).



Water Conservation and Hydroponics

How to conserve water and make simple hydroponics to produce food

How is hydroponics more sustainable than traditional farming?

The word hydroponic is a combination of the Latin words “hydro” which means water and “ponos” which means work. Hydroponics is the process of growing plants without soil. In a hydroponic system, nutrients and supplements are dissolved into water, creating a nutrient solution. Hydroponics has at least one advantage over traditional farming techniques. It uses far less water. For example, to grow 1 kilogram of tomatoes, intensive farming requires 400 litres of water, and hydroponics uses only 70 litres of water.



Information [source](#). Photo [source](#).

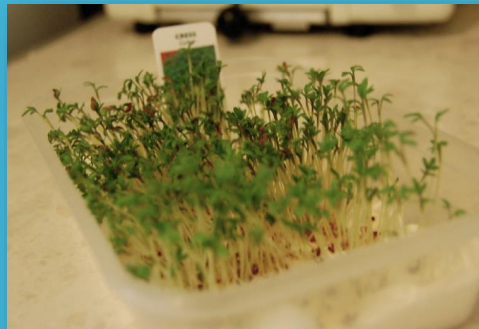
ACTIVITY 2: Hydroponics using a discarded celery base.

Take the base of a celery that you usually cut off and either throw away or compost. Place it in a container of water so the base of the celery is under the water. Check each day that the base is still under water. Every second day change the water, so it is in fresh water. After a couple of days, you should be able to see the celery reshoot like the photo opposite. You can also use the discarded bases from lettuce, bok choy, cabbage, shallots and chives or the tops of carrots or pineapples. There are many foods you can regrow from scraps using hydroponics.



ACTIVITY 1: How to grow food in a very simple hydroponics.

Growing alfalfa seeds is very quick and easy and is one of the simplest forms of hydroponics. This 2.45 minute [video](#) shows how to set it up to grow. It is very cheap to set up. All you really need to buy is the alfalfa seeds. You can also grow many more food plants using this technique. Photo [source](#)



ACTIVITY 3: How can you save water?

Let us think about the amount of water needed for food production. Watch the video '[Is stress causing a global food emergency?](#)' to find out some reasons for suggesting a global reduction in water use during the growing of raw products.



For more information on water scarcity and how we can avoid wasting water go to the [UN Sustainable Development Goal 6 Clean Water and Sanitation](#).

Discover how much water you use every day: not just the water that comes out of the tap, but also the water it takes to make the food you eat, the energy you use and the products you buy. Use the '[Water Footprint Calculator](#)' to work out your water footprint.

Write a list of five things you can do at home and school to reduce water.



These are free water education resources for teachers and students about water in the Georges River catchment in South Sydney, and more generally, in Australia. These education modules have been prepared for Stage 3 in primary schools.

They cover facts for kids about drinking water, water uses, the water cycle, water pollution, water conservation, rainfall, drought, floods, aquatic food webs, and how to measure water conditions using waterbugs, plus much more.

www.georgesriver.org.au/learn-about-the-river/schools

There are many different stakeholders and landowners in the Georges River Catchment who all have a responsibility to manage their land in a way that ensures there is a minimal impact on the river and its ecosystems.

Georges Riverkeeper's Members:



Georges Riverkeeper's Partners:

