Curriculum focus

The resources in the English Teacher Manual help teachers and students explore how language and terminology is used to communicate in and about agriculture. Students explore the Virtual Video Excursion/s for one or more industries and use this information to explore language development and use, idiom, technical and specialist language, and media studies.

How to use this Teacher Manual

The English Teacher Manual consists of lesson plans and supplementary activities about several agricultural industries in Australia. There are facts about Australian agriculture for your use on page 3, 5, 11, 15, 22 and 28.

First, start with the Springboard virtual video excursions on page 4.

Then, move on to the products or industries within this manual that match your learning aims or interests.

Additional research sources, facts and vocabulary are included within each industry section. They can be used in class discussion or provided to students for their projects.
Lesson 1
Where Does My Food Come From?

ACELA1543
Analyse how the text structures and language features of persuasive texts, including media texts, vary according to the medium and mode of communication

ACELY1730
Interpret the stated and implied meanings in spoken texts, and use evidence to support or challenge different perspectives

ACELY1731
Plan, rehearse and deliver presentations, selecting and sequencing appropriate content, including multimodal elements, to reflect a diversity of viewpoints

Lesson 2
Communities of Practical Language

ACELA1541
Understand how conventions of speech adopted by communities influence the identities of people in those communities

Lesson 3
Fruit Packaging Persuasion

ACELA1766
Understand how cohesion in texts is improved by strengthening the internal structure of paragraphs through the use of examples, quotations and substantiation of claims

ACELA1809
Understand how coherence is created in complex texts through devices like lexical cohesion, ellipsis, grammatical theme and text connectives

ACELY1736
Create imaginative, informative and persuasive texts that raise issues, report events and advance opinions, using deliberate language and textual choices, and including digital elements as appropriate

Lesson 4
Counting on Fish for the Future

ACELA1766
Understand how cohesion in texts is improved by strengthening the internal structure of paragraphs through the use of examples, quotations and substantiation of claims

ACELA1809
Understand how coherence is created in complex texts through devices like lexical cohesion, ellipsis, grammatical theme and text connectives

ACELY1736
Create imaginative, informative and persuasive texts that raise issues, report events and advance opinions, using deliberate language and textual choices, and including digital elements as appropriate

Lesson 5
Milking it for Effect

ACELT1630
Identify and evaluate devices that create tone, for example humour, wordplay, innuendo and parody in poetry, humorous prose, drama or visual texts

ACELY1730
Interpret the stated and implied meanings in spoken texts, and use evidence to support or challenge different perspectives

Supplementary activity cards relate to these learning outcomes:

Ad Agency – (ACELT1628 & ACELY1736 – Combinations of words and images)
Facts about the Australian agricultural industry

- The gross value of Australian agriculture increased by $3.7 billion from 2014–15, to $58.1 billion in 2015–16.
  \(\text{SOURCE: ABARES, Agricultural Commodities – June Quarter 2017.}\)

- In Australia, individuals spent on average $4739 for food in 2015−16. This includes eating out and non-alcoholic beverages. This amount has risen by 16% during the past six years.
  \(\text{SOURCE: ABS, Household Expenditure Survey, Australia: Summary of Results, 2015–16, Catalogue No.6530.0.}\)

- Food imports, particularly for processed food, accounted for only 15 per cent of household food consumption in Australia in 2015−16.
  \(\text{SOURCE: Hogan, Lindsay. (2017) Food demand in Australia: Trends and food security issues. ABARES research report 17.7, Canberra.}\)

- Out of the $58.1 billion worth of food and fibre Australian farmers produced in 2015−16, 77 per cent ($44.8 billion) was exported.
  \(\text{SOURCE: ABARES, Agricultural Commodities – June Quarter 2017}\)

- More than 99% of Australia’s agricultural businesses are wholly Australian owned, owning 88% (or 343.3 million hectares) of Australia’s agricultural land. Wholly Australian owned businesses also control 87% of Australia’s agricultural water entitlements (or 13.3 million megalitres).
  \(\text{SOURCE: ABS, Agricultural Land and Water Ownership, 2015–16, Catalogue No. 7127.0. 2017}\)

- As of May 2017, 304,200 people were employed in the Australian farm sector — accounting for about 3% of the national workforce.

- Across the supply chain agriculture powers 1.6 million jobs.
  \(\text{SOURCE: Australia’s Farm Dependent Economy: Analysis of the role of Agriculture in the Australian Economy.}\)

- 216,100 males and 88,100 females are employed in the Australian farm sector

- Agricultural businesses occupy and manage 48% of Australia’s landmass, as such, they are at the frontline in delivering environmental outcomes on behalf of the broader community.

- At 30 June 2016 there were 371 million hectares of agricultural land in Australia, a 1.4% increase on the previous year.

- Australian primary industries have led the nation in reducing greenhouse gas emissions intensity — a massive 63% reduction between 1996−2016.

- Australian water consumption decreased in 2014–15 by 7% from 2013−14. The largest decrease in water consumption was in the agriculture industry.

- Agricultural businesses spend a significant amount on managing pest animals and weeds. An average of $19,620 was spent per agricultural business on undertaking pest animal and weed management activities.
  \(\text{SOURCE: Stenekes, N, Kancans, R and Binks, B, 2017, Pest animal and Weed Management Survey: National landholder survey results, ABARES research report 17.5, May. CC BY 4.0.}\)

- Australian farmers are among the most self-sufficient in the world, with government support for Australian farms representing just 1% of farming income. By comparison, in Norway it is 62%, Korea 49%, China 21%, European Union 19% and United States 9%.
If this is your first time teaching with the From Paddock to Plate Schools Program, welcome! When planning your lessons, you may first like to read the Welcome Guide on our website.


Assessing prior knowledge

Kick off by understanding the level of knowledge your students have of farming in Australia. This will determine your structure of delivery.

- ASK the students to describe and list what they know about farming in Australia.
- EXPLORE the facts about Australian agriculture (page 3).
- BRAINSTORM and gather ideas, questions and information from the class and use this as a platform to begin this unit. What information do students want to confirm, check, debate or explore?
- DISCUSS any questions that arise.

Now is the time to choose and watch a selection of the From Paddock to Plate Virtual Excursions.

You can find them all on the From Paddock to Plate website. Log in and choose your year level, subject or industry of interest:

www.frompaddocktoplate.com.au

Ask students to reflect on what they already know about this industry and what the video showed them that was new, or that changed their thinking.
Ask students first to reflect on the *From Paddock to Plate Almonds Virtual Video Excursion*:

- What words would they use to describe an orchard?
- What can they say about the paddock to plate journey of almonds and almond products?
- What did they learn that they hadn’t considered before?
- What would they like to know more about the almonds industry in Australia?

## Facts and Vocabulary - Almonds

### Facts about the Australian almond industry

- Australian growers produce approximately 10% of the total volume of almonds grown in the world.
- Orchard area planted to almonds increased by 15.8% or 4,904 hectares in 2016 to now total 35,886 hectares
- The number of almond trees now planted in orchards totals more than 10 million.
- Two million virus tested buds were delivered by the ABA to nurseries for grafting to produce healthy trees
- 2016 production of 82,333 tonnes was slightly less than the 2015 harvested crop
- Australia produced 7.7% of the global crop to remain the world’s second largest producer behind the USA that grew 80% of world production
- Almonds were 62% of Australia’s total tree nut crop that includes macadamias, walnuts, pistachios, hazelnuts and chestnuts (measured as inshell tonnage)
- 97% of almond orchards are efficiently irrigated using drip systems managed by soil moisture monitoring technology
- Annual per capita consumption of almonds in Australia is increasing strongly and exceeded one kilogram for the first time in 2016/17
- Australia ranks 6th in per capita consumption globally
- Domestic sales tonnage increased by 9.9%
- 46.7% of Australian households purchased almonds in the year ending February 2017
- Almond demand by manufacturers was boosted with 274 new products reaching supermarket shelves in 2016
- Australian almonds were exported to 46 countries
- Almond exports earned the nation $464 million
- For every one tonne of almonds sold in Australia, 2.7 tonnes were sold overseas
- India was the single largest destination for exports
- Europe as a region consumed 43.2% of Australia’s almond exports with sales of $200.3 million
- East Asia is an emerging market for Australian almonds taking 13.8% of total exports

Useful words and phrases

- Activated almonds
- Almond meal
- Almond milk
- Australian Stock Exchange
- Bacteria
- Belly dumper
- Biomass
- Blanch
- Conveyor belt
- Deciduous
- Drupe
- Export
- Fertilisation
- Foliage
- Geographic diversity
- Hi vis clothing
- Hulling process
- Husk

- Irrigation
- Kernel
- Laser sorter
- Microorganisms
- Non-pollinator
- Pasteurisation
- Pollination
- Prune
- Quality assurance
- Renewable energy
- Salmonella
- Self-pollinator
- Shelling
- Stock feed
- Stock pad
- Stockpile
- Weighbridge
Lesson 1

Where Does My Food Come From?

Themes

<table>
<thead>
<tr>
<th>Food origin</th>
<th>Food miles</th>
<th>Labelling laws</th>
<th>Traceability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethics</td>
<td>Nutrition</td>
<td>Environment</td>
<td>Community</td>
</tr>
<tr>
<td>Education</td>
<td>Seasonality</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Perspectives on food

After watching the From Paddock to Plate Almonds Virtual Video Excursion, students DISCUSS and ASSESS Bruce’s perspective about why he believes it’s important that people should know where their food comes from.

How do we infer his opinion from his words? What language choices, framing and context in the video are designed to convince us to support his point of view?

EXPLAIN the term ‘locavore’ – used to describe a person who prefers to eat local food.

EXPLORE some of the comments Bruce makes in the video, below – and others from the video itself. Don’t forget to explore gaze, distance, shot angle and placement as devices used to persuade.

“This is the most exciting time of the year. About February, March in Australia each year, the trees behind me are ready to drop their fruit. Naturally the nuts will drop on the ground and then what we can do is try and accelerate that process by shaking them.”

(5:15 – 5:28)

“I think the pride that I have in this company is the fact that it is Australian-owned, we have Australian trees and we’re making a health food that’s good for everybody, and that it’s truly vertically integrated from paddock to plate. They taste great too!“

(13:39 – 13:52)

Comparing opinions

Once students have determined Bruce’s position, with evidence – students find and COMPARE other views on this topic, such as views about the reasons why people don’t know where their food comes from as portrayed in various media texts.
Lesson 1: Where Does My Food Come From? (continued)

Some examples are provided below and resources in Teacher Resources – but students can use a multitude of texts, visual and written, for this.

Staging a debate

After students have explored multiple viewpoints on the issue, hold a verbal debate about the topic: People should know where their food comes from.

Provide tie, scaffolding and resources to enable students to prepare a strong oral argument based on evidence and authoritative reasoning. You might decide to run this in classic debate format – with a set number of minutes for each person to present, one for and one against, and a short (perhaps 1 minute) opportunity for each speaker to present a rebuttal.

Film the debate and allow students to critique their own reasoning and presentation.

Recommended source material:

‘About one in four children does not know where butter or cheddar cheese comes from, a survey of more than 1,000 primary school children and their parents has revealed. The research by the Stephanie Alexander Kitchen Garden Foundation and Medibank also showed that three in five parents were concerned their child preferred processed foods over fresh or healthy alternatives. The survey found 45 per cent of parents did not think their child knew how to boil an egg, while three in five said their child would not know how to bake a potato. Children who said they “always” helped with grocery shopping were twice as likely to know where food came from and how it was grown, compared with those who said they never helped. Chef and food educator Stephanie Alexander said the results demonstrated the importance of food education programs. “An intervention at school or even at early learning years which is enjoyable, fun for the kids, that opens their eyes to the infinite world of flavour and taste is an essential bit of education that’s missing,” she said. “It seems to me that we are avoiding facing the fact that one of the things is we’ve got to change the way people choose food.”

Key findings from survey:

- 25 per cent do not know where butter came from
- 24 per cent do not know where cheddar cheese came from
- 60 per cent parents said their child would not know how to bake a potato
- 45 per cent parents said their child would not know how to boil an egg

‘The government has released the designs for new country of origin labels, which is a big step towards ending the confusion around country of origin labelling, especially for consumers who want to know how much of a product was manufactured or grown locally. But you won’t see these labels in supermarkets until later in the year, so at the moment consumers only have access to sketchy information on packaged foods. And what little info is provided can be quite confusing. ‘Product of Australia’, ‘Made in Australia’, and ‘Made in Australia from local and imported ingredients’, for instance, all mean different things. And the rules around the current country of origin labelling system leave plenty of room for confusion.’


‘6 big reasons to eat local:

• Produce that is purchased in the supermarket often has been in transit or cold-stored for days or weeks, while produce from your local farmer’s market or farm-gate has often been picked within 24 hours of your purchase. This freshness not only affects the taste of your food, but the nutritional value. Locally grown fruits and vegetables are often allowed longer to ripen, because they do not have to be “rugged” or to stand up to the rigors of shipping, and so can be handled less. (You are going to be getting peaches so ripe that they fall apart as you eat them!).

• By buying locally grown food you’ll be strengthening your community by investing your food dollar close to home. Only 18 cents of every dollar, when buying at a large supermarket, go to the grower. 82 cents go to various unnecessary middlemen. Cut them out of the picture and buy your food directly from your local farmer.

• Buying local keeps us in touch with the seasons. By eating with the seasons, we are eating foods when they are at their most flavoursome, are the most abundant, and the least expensive.

• Whether it’s the farmer who brings local apples to market or the baker who makes local bread, knowing part of the story about your food is such a powerful part of enjoying a meal.

• Supporting local food systems generally means less energy, emissions and food miles associated with our food. In CERES ‘Food miles in Australia report, 2008’, an average shopping basket of 29 common food items traveled over 70,000 kms—that’s nearly two times the distance around the Earth. Just four imported items accounted for nearly 50,000 kms.

• Our present industrialised food system involving transporting food long distances is dependent on the artificially low energy prices that come with ‘cheap oil’. This will not last forever. World oil production has already peaked, according to some estimates, and while demand for energy continues to grow, supply will soon start dwindling, sending the price of energy (and food) through the roof. Why wait to re-evaluate our food systems when we are forced to, when we can start to build resilient local economies now by supporting energy efficient agricultural methods, like smaller-scale organic agriculture, and local production?’

– Local Harvest: [www.localharvest.org.au](http://www.localharvest.org.au)
Teacher resources:

- Local Harvest – Why is Local Important?
  www.localharvest.org.au/why-is-local-important/

- Sustainable Connection – Why eat local?
  https://sustainableconnections.org/why-eat-local/

- Sustainable Table: www.sustainabletable.org.au

- Taste of the Region – Why you should eat local:

- Eat Local South Australia: https://eatlocalsa.com.au

- My Open Kitchen: http://my-open-kitchen.com

- Buy West Eat Best: https://www.buywesteatbest.org.au/eat-local/
Ask students first to reflect on the *From Paddock to Plate Beef Virtual Video Excursion*:

- What does a cattle farm look like?
- What can they say about the paddock to plate journey of beef?
- What observations can they now make about how cattle farmers are presented in media?
- What did they learn that they hadn’t considered before?
- What would they like to know more about the beef industry in Australia?

**Facts and Vocabulary - Beef**

**Facts about the Australian beef industry**

- In total, Australian beef cattle farmers produce 2.5 million tonnes of beef and veal each year.  

- The beef industry accounts for 55% of all farms with agricultural activity.  

- The gross value of Australian cattle and calf production (including live cattle exports) in 2015–16 was $12.7 billion  

- Australians eat an average 26kg of beef per person, per year. Remarkably, this has remained relatively constant for the past 15 years  

- In 2015–16, Australians spent $8.5 billion on beef. In terms of volume, beef is the third most popular fresh meat consumed through the food service industry after chicken and seafood  

- Australians remain the second-largest consumers of meat per capita, and the sixth-largest consumers of beef in the world, averaging 26 kg per person in 2016  

- Australia exported 962,983 tonnes of beef in 2016–17, worth $8.5 billion. The major export markets for beef are Japan (29%), the United States (21.7%) and Korea (16.8%).  

- Australian live cattle exports are worth $1.2 billion in 2016–17 – predominantly exported to Indonesia (58.7%), Vietnam (17.7%) and China (8.2%).  

- Australia produces 3% of the world’s beef, and was the third largest beef exporter during 2016–17.  
Useful words and phrases

- Abattoir
- Arbitrage
- Australian Certified Organic
- Barley
- Bear market
- Boning room
- Bovine
- Bovine spongiform encephalopathy (also known as 'mad cow disease')
- Bull
- Bull market
- Butcher
- By-product
- Carcase weight
- Chorizo
- Dressed weight
- Eastern Young Cattle Indicator (EYCI)
- Export market
- Fat score
- Feedlot
- Grain-fed
- Grass-fed
- Heifer
- Holistic
- Livestock agent
- Marbling
- Meat Standards Australia
- Muscle score
- National Livestock Identification System
- Omega-3
- Organic
- Pastrami
- Premium
- Restocker
- Rotational grazing
- Rump steak
- Sold to the trade
- Steer
- Stocking density
- Store sale
- Trade buyers
- Vealer
- Yearling
- Wagyu
Lesson 2

Communities of Practical Language

Themes
Community  |  Family  |  Jobs  |  Skills

Getting started
Students work in pairs to LIST specific technical and specialist words and phrases used by beef farmer, Warren, in the video. The list of Useful words and phrases on page 12 may be very useful.

Drafting definitions
Students IDENTIFY the meaning of any of the specific technical words and vocabulary they encounter. Divide up the class list of new vocabulary and allocate a word or words/ phrases to each student.

Compile a class glossary for the From Paddock to Plate Beef Virtual Video Excursion. The vocabulary list before this lesson may be of use.

DISCUSS – did students notice that some of the words have a different meaning in the cattle industry than in other contexts? (E.g. ‘head’.)

Students REFLECT on the different ways communities of specialists use language for meanings that are defined by the context of shared work knowledge and practice.

DISCUSS – what other communities of specialist knowledge are likely to have technical vocabulary and practical terminology of their own? (E.g. different fields of agriculture, such as tree fruit and nut growing, beekeeping – medical professions – maritime professions such as fishing, sailing, commercial shipping – emergency services including fire, search and rescue.)

Students may research one of the identified language communities, or one of the other forms of agriculture in the From Paddock to Plate resources, such as Almonds or Honey.

Extension
Students define the difference between ‘technical vocabulary’ and ‘jargon’.
Activity card:

**Ad Agency**

Use the special and technical language you explored in Lesson 2 to create a short advertisement to encourage graduates to enter the industry (e.g. an advert for becoming a beef farmer).

Make sure your advert uses at least three of the technical terms or special vocabulary you encountered, that the meaning of the word can be inferred from the context (words and images), and that the word is used accurately.

Your advert should positively encourage young people to join this community of professionals.

Storyboard your advert in 10-15 frames showing images and words.

**ACELT1628** Understand and explain how combinations of words and images in texts are used to represent particular groups in society, and how texts position readers in relation to those groups

**ACELY1736** Create imaginative, informative and persuasive texts that raise issues, report events and advance opinions, using deliberate language and textual choices, and including digital elements as appropriate
Ask students first to reflect on the *From Paddock to Plate Cherries Virtual Video Excursion*:

- How do cherries grow?
- What technical or specialist language did they hear in the cherries video?
- What can they say about the paddock to plate journey of Australian cherries?
- What did they learn that they hadn’t considered before?
- What would they like to know more about the fruit growing / orcharding industry in Australia?

**Facts and Vocabulary - Cherries**

**Facts about the Australian cherry industry**

- Cherries are a small, plump stone fruit and a member of the Rosacea (rose) family that also includes almonds, peaches, apricots and plums.
- The top four cherry producing countries (Turkey, USA, Iran and Italy) account for approximately 50% of the world’s cherry production.
- Australia is a relatively small cherry producer by world standards, only producing approximately 0.5% of the world’s total cherry production.
- Currently up to 15,000 tonnes of Australian cherries are produced every year with 30% exported. This number is expected to rise to 20,000 tonnes and 50% exported by 2020.
- The Australian industry is spread over six states with around 2,845 hectares under production and 485 grower enterprises currently operating.
- New South Wales and Victoria are the two largest producers of cherries. Tasmania has had a rapid expansion in plantings and is currently the third highest producer. It has a strong export focus, enhanced by its relative pest and disease freedom. South Australia is the fourth largest producer with a significant proportion of its production sold interstate and a small percentage also exported. Both Western Australia and Queensland are relatively small producers primarily focusing on their domestic markets.
- Australian cherries are available from mid/late October to late February, depending on the state and seasonal calendar due to climatic variation, varieties and growing season.
- There are two main cherry species:
  - Sweet cherries (*Prunus avium* L.) are often sold as just generic fresh cherries.
  - Sour cherries (*Prunus cerasus* L.) are mostly used in processed products such as freezing, canning and juices or typically preserved and used in cooking or for making cherry brandy.
- Today there are over 50 varieties grown and many more are being developed in Australia.
- Sour cherries are more commonly grown in Europe but some plantations exist in Victoria South Australia and Tasmania.
- The most well known sour cherry is the Morello.
- A study published in the American Journal of Clinical Nutrition found that sour cherries ranked 14 in the top 50 foods for highest antioxidant content per serve – and are among well-known ‘superfoods’ such as red wine, berries and dark chocolate.

SOURCE: Cherry Growers Australia Inc.
Useful words and phrases

- Bird damage
- Blossom
- Certified organic
- Cherry season
- Cherry variety
- Commercially available
- Cool store
- Cross compatibility
- Cultivar
- Domestic market
- Earwigs
- Export
- Fertigation
- Fertiliser
- Flowering
- Frost
- Fruit maturity
- Fruit set
- Grading equipment
- Gross value
- Growing season climatic conditions
- Global cherry production
- Hall netting
- Hand picked
- Harvest
- Irrigation
- Microclimate
- Morello
- Orchardists
- Packing shed
- Pollenisers
- Providence
- Pruning
- Rootstock
- Seasonality
- Shelf life
- Sour cherries
- Sweet cherries
- Sweetheart
- Thinning
- Topography
- Tree vigour
- Verticillium wilt fungus
Lesson 3

Fruit Packaging
Persuasion

Themes

Food waste | Packaging | Food origin | Environment
Recycling | Food miles | Education | Community

Food packaging

Students will RESEARCH and WRITE an essay of extended length using examples and quotations to EXPLAIN and SUBSTANTIATE a personal viewpoint about food packaging in Australia and around the world.

Before beginning, students CONSIDER the fruits that are wrapped in plastic at the supermarket. (A visit to a supermarket – or research online will help with this.) Students ANALYSE why fruit is wrapped in plastic.

In pairs, students REFLECT on the fact that fruits don’t have a long shelf life and consumers’ and supermarkets’ have high cosmetic standards.

- Would you be happy to buy an “ugly” pear, a strawberry with dirt on it, or a cherry without a stalk (as Harvey talks about below)?

"Cherries are picked with their stalks intact, otherwise the flesh around the top of the cherry will wrinkle and go off very quickly and it also doesn’t look as attractive. Part of the cherry is the stem attached and it really just enhances the look of a cherry."
(5:48 – 6:08)

"They stay in cool store overnight and then are taken to our packing shed and is packed into either one kilo boxes or five kilo boxes."
(7:20 – 7:28)

"Everyone has a little love affair with cherries. Everyone loves cherries and it’s quite surprising when you give someone a kilo of cherries in a lovely little pack like that, they think they’re winning in lotto almost you know. So it’s really nice and we get a lot of pleasure out of it."
(7:58 – 8:13)
Lesson 3: Fruit Packaging Persuasion  (continued)

Did you know?

‘There has been a 170 per cent increase in waste over the past 20 years, with two-thirds of that coming from food packaging.’

– Cost of convenience: Fruit and vegetables packaged in plastic the source of increasing waste in Sydney by Jane Hansen, The Daily Telegraph, 29 May 2016

Research and debate the problem

Students EXPLORE what impact food packaging is having on the environment and FIND OUT how we can avoid it.

They DEBATE whether or not today’s society can ever be waste free.

Students CONSIDER whether growing their own fruit would reduce food waste (given the time and effort put into production) as well as buying fruit at a farmers’ market direct from the farmer.

Resources below are provided to help students research different points of view on the topic before they choose a position and develop their thesis.

When writing, students refer to their research and USE cohesive devices such as lexical cohesion (repetition of words, synonyms, antonyms, pronouns) and ellipsis to fit ideas, sentences and details together clearly.

Short Documentary

Students WATCH this short documentary called ‘Waste Deep’ filmed by the team at Sustainable Table. It ‘shows how food and plastic waste can be avoided, drawing attention to much of the unnecessary packaging that is choking our lives, oceans and animals. It also gives an insight into the environmental and social impacts of our wasteful ways.’

• Sustainable Table – Waste Deep:

REDcycle

Students FIND OUT more about the REDcycle Program that has teamed up with major supermarkets and brands in Australia to make it easier for consumers to keep their plastic packaging out of landfill. DISCUSS how you and your school can get involved in this initiative.

• REDcycle: http://redcycle.net.au/redcycle/
Recommended source material:

‘Every year Australians waste about $10 billion worth of food. It starts on
the farm, where fruit and vegetables are rejected for cosmetic reasons, and
continues right through to the household, where leftover or unwanted food
is thrown out. In France, supermarket giant Intermarche has introduced a
successful campaign called Inglorious Fruits and Vegetables. The supermarket
purchased produce usually discarded for purely cosmetic reasons and displayed
it in special aisles, sold them at a 30 per cent discount. When it was launched,
the program was an immediate success; within a month, it reached over 13
million people and stirred a national conversation about food waste and just
what makes a piece of fruit, or a vegetable acceptable to the consumer. The
campaign only faced one problem: the produce quickly sold out. Now the ugly
fruit and vegetables are available in soup and fruit juice form. Intermarche
calls it ‘a glorious fight against food waste’. In Australia, between 20 and
40 per cent of fruit and vegetables grown are rejected before they reach the
shops because they don’t meet supermarkets’ high cosmetic standards and
specifications.’

– Campaign for ugly fruits aims to end food waste, Bush Telegraph, Radio National,
14 July 2014: www.abc.net.au/radionational/programs/bushtelegraph/irregular-
food/5595302

‘Corn on trays, apples sliced in containers, lettuce wrapped in plastic and
sweet potatoes peeled and displayed on polystyrene trays. It’s the modern-
day obsession with faster food that is creating a tsunami of waste swamping
Sydney. And there is no need for it — fruit and vegies already come in nature’s
own packaging that doesn’t clog our household garbage bins. There has been
a 170 per cent increase in waste over the past 20 years, with two-thirds of that
coming from food packaging. And there is a growing call for supermarkets to
stop pandering to our time-poor society and obsessive parents by providing
peeled fruit and vegetables in plastic. “Waste has a growth of 7.8 per cent
annually and two-thirds of that growth is food packaging,” said Mike Ritchie,
from waste consultancy group MRA Consulting.’

– Cost of convenience: Fruit and vegetables packaged in plastic the source
of increasing waste in Sydney by Jane Hansen, The Daily Telegraph, 29 May
news-story/fcadfd7a60783375f1beba46ac60227f

‘An airtight plastic bag is the worst choice for storing vegetables, according
to Barry Swanson, professor emeritus of food science at Washington State
University. And don’t pack veggies tightly together, either; they need space for
air circulation or they’ll spoil faster.’

– Ten fruits and vegetables you’re storing wrong by Candy Sagon, The Washington
Post, 21 October 2014: www.washingtonpost.com/lifestyle/food/ten-fruits-and-
vegetables-youre-storing-wrong
Recommended source material (continued):

'We are mindful of the need to minimise our waste and over the past five years we've been making good progress to improve our recycling rate which has increased to 70% this year. We expect this trend to continue as we continue to work with the waste industry on new technology that can recycle more of our waste as well as consumer waste. We are also helping our customers with their waste by providing recycling solutions. Hopefully, you've heard about our soft plastics recycling program with RED Group that's now available in 480 Coles stores across Australia where customers can bring back their soft plastics – including bread bags, biscuit packs, plastic bags and polypropylene shopping bags – to be recycled and turned into useful things like outdoor furniture for schools and, most recently, trolley bays at one of our new stores. Approximately 280 tonnes of plastic was returned to our supermarkets by customers for recycling via this program in the past year. We understand some consumers would prefer not to have organic produce packaged in plastic. It's something we'll continue to review but we don't have an easy solution for this right now.'


'Shopping at the supermarket inevitably results in a trash bin overflowing with plastic refuse. Whether it's juice, meat, fruit, or other food items, it's all packaged in plastic. The quantities are enormous -- Germany alone produces roughly 5.7 million tons of it each year. Although the majority of people conscientiously put these packaging into their yellow recycling bins, only about 42 percent of the waste gets "reincarnated" as diapers, fleece pullovers, stuffed animals, and the like. The rest is sent to waste incineration plants, where it is converted into energy. Black plastics in particular suffer this fate because it has thus far been impossible to sort them by material type. Conventional sorting systems operate specifically within the near-infrared range, which in general allows them to categorize plastics. But what works especially well for most plastics fails for black ones: the soot that gives them their dark color absorbs most of the signal, so the optical system cannot see these substances. At the same time, the need to recycle these dark plastics has become more urgent, because any efforts to meet the EU thresholds for car recycling programs will have to include black plastics.'

– Sorting black plastics according to type, Fraunhofer–Gesellschaft, Science Daily, 1 June 2016: www.sciencedaily.com/releases/2016/06/160601083922.htm
Lesson 3: Fruit Packaging Persuasion (continued)

Did you know?

- ‘Aussies throw out $8 billion worth of edible food every year and 33% of this amount is fresh food like vegetables!

- An estimated 20-40% of fruit and vegetables are rejected, even before they reach the shops, mostly because they don’t match the consumers’ and supermarkets’ high cosmetic standards.

- If you add up all the food Australia wastes each year it’s enough to fill 450,000 garbage trucks. Placed end-to-end the convoy would bridge the gap between Australia and New Zealand just over three times.

- The hidden impact? When you throw out food, you also waste the water, fuel and resources it took to get the food from the paddock to your plate.

- What are the environmental effects? When food rots with other organics in landfill, it gives off a greenhouse gas called methane, which is 25 times more potent than the carbon pollution that comes out of your car exhaust.’

Ask students first to reflect on the From Paddock to Plate Fish Virtual Video Excursion:

- What does a typical day on a fishing boat look like?
- What specialist or technical language did they observe in the video?
- What can they say about the paddock to plate journey of Australian fish?
- What did they learn that they hadn’t considered before?
- What would they like to know more about the fishing industry in Australia?

Facts and Vocabulary - Fish

Facts about the Australian fish industry

- Australia’s wild capture fisheries and aquaculture industries contribute almost $3 billion a year to Australia’s economy.
  
  SOURCE: Australian Government, Department of Agriculture and Water Resources December 2017

- More than 14,000 people are directly employed by the commercial fishing and aquaculture sectors and many of these jobs are based in regional areas.
  
  SOURCE: Australian Government, Department of Agriculture and Water Resources December 2017

- Australia’s Exclusive Economic Zone extends 200 nautical miles from the coast and is the world’s third-largest fishing zone (8.1 million square kilometres).
  
  SOURCE: Australian Government, Department of Agriculture and Water Resources December 2017

- Around 300 boats operate in Commonwealth fisheries.
  
  SOURCE: Australian Government, Department of Agriculture and Water Resources December 2017

- More than 3.5 million Australians are recreational fishers.
  
  SOURCE: Australian Government, Department of Agriculture and Water Resources December 2017

- On average, Australians eat 140 serves of seafood every year.
  
  SOURCE: Australian Government, Department of Agriculture and Water Resources December 2017

- The volume of fishery and aquaculture production increased by 4 per cent between 2006–07 and 2016–17. During this period, the pattern of production changed significantly, shifting from the production of wild-catch stocks toward production of aquaculture products.
  
  SOURCE: Australian Bureau of Agricultural and Resource Economics and Sciences (ABARES)

- Asia remains a major export destination for Australian fishery and aquaculture products. However, the pattern of Australian fishery and aquaculture exports has shifted towards the south-eastern China and Vietnam region. The major export product is rock lobster.
  
  SOURCE: Australian Bureau of Agricultural and Resource Economics and Sciences (ABARES)

- Australia’s apparent consumption of seafood increased, on average, at an annual rate of 0.8 per cent between 2006–07 and 2016–17, increasing 9 per cent overall in this period. Owing to faster population growth, apparent per person consumption of seafood declined over the same period, from 15 kilograms per person on an edible equivalent basis in 2006–07 to 13.9 kilograms per person in 2016–17.
  
  SOURCE: Australian Bureau of Agricultural and Resource Economics and Sciences (ABARES)
Useful words and phrases

- Acoustic survey
- Algal bloom
- Artisan fishing
- Anadromous
- Antarctic convergence
- Aquaculture
- Beam trawling
- Benthos
- Biotoxins
- Bottom trawling
- Bycatch
- Casting
- Catadromous
- Cephalopods
- Cetacean
- Crustaceans
- Dredging
- Ectothermic
- Elasmobranch
- Endemic
- Estuary
- Farmed fisheries
- Fecundity
- Founder effect
- Gametes
- Ghost nets
- Habitat
- Hatchery
- Individual transferable quota (ITQ)
- Invertebrates
- Mariculture
- Marine mammal
- Meristics
- Migration
- Oceanodromous
- Plankton
- Shoaling
- Spawning
- Sustainable fishing
- Tag and release
- Threatened species
- Vertebrates
- Wild fisheries
Lesson 4

Counting on Fish for the Future

Themes

Traceability | Animal welfare | Food security | Food origin
Policy     | Climate change | Population   | Community

Getting started

Review what the From Paddock to Plate Fish Virtual Video Excursion tells us about fish quotas. What are they and why are they imposed? Who sets and monitors them?

"Australia has got very strict restrictions on our fisheries, on all the types of fisheries. So, Australia is very sustainable. With us, we’ve got a quota and we can catch what we want in the quota, but I don’t need all the quota because I only need small schools every day for consistency to keep the fresh market going."

(4:01 – 4:22)

Opinions in writing

Students WRITE a short piece, using credible references, examples and quotations to EXPLAIN and SUBSTANTIATE a personal viewpoint on whether fishing quotas in Australia, managed by the State and Territory Governments, are essential or not.

Quotations in this lesson, and from elsewhere in the video, should be used and appropriately attributed. Students’ own research from authoritative sources may add evidence and context to these quotations.

Students should consider the current population health of several of the most popular seafood species rather than a single blanket quota. They address the question: Why are some species more prone to overfishing and more at risk of collapse than others? (For example, contrast Orange Roughy with Sardines.)

Students should use cohesive devices such as lexical cohesion (repetition of words, synonyms, antonyms, pronouns) and ellipsis to fit ideas, sentences and details together clearly into a structured argument supporting their opinion.
Lesson 4: Counting on Fish for the Future (continued)

“"My zone is huge. I’m only fishing within two or three kilometres of my waters and I’ve got thousands of miles of it. So super sustainable. I’ve got a lot of water out there to catch sardines.”

(4:25 – 4:39)

“If I got two tonne a day, that’s plenty, but I’m happy with one tonne. Sometimes we catch three, but no more than that. That’s enough.”

(4:40 – 4:47)

Recommended source material:

‘Members of the southern bluefin tuna industry have expressed concern for the future as it enters the second year of a reduced quota of 250 tonnes. In 2017 the industry saw an increase of 500 tonnes in the international tuna quota with a voluntary transfer of 250 tonnes to recreational fishers. Stehr Group chairman Dr Hagen Stehr AO said the industry had battled for years and invested millions to get to where it was and the move had cost the industry and Port Lincoln jobs and money. Dr Stehr argued then assistant minister for Agriculture and Water Resources Anne Ruston had not been truthful to the industry about the impact and the move was to appease recreational fishers in Victoria ahead of the 2018 state election. “That 250 tonne if grown out is 500 tonne...that’s an extra 500 tonne for Port Lincoln, for jobs, for infrastructure,” he said. “This is straight taking money out of Port Lincoln, not just for us but for the town as well. “The quota wasn’t given to us, we bought it, every tonne I own, I bought.” Mr Stehr said he saw it as nationalisation of the industry.’

– Southern bluefin tuna industry unsure of future by Jarrad Delaney, Port Lincoln


‘Sustainability’ is a very hard thing to define, especially when it relates to seafood. There are many different factors that need to be assessed, such as a species’ total population, breeding habits (how long it takes for a population to regenerate), migration routes, and fishing methods employed, as well as the effects of fishing pressure on the broader ecosystem. And that’s just wild fisheries... Aquaculture (fish farming) is another kettle of fish entirely! It’s no wonder that different groups and individuals sometimes come to different conclusions about what is sustainable and what isn’t. Two common species well loved by most Australian’s are Barramundi and Snapper. Both are tricky, so we thought we better have a closer look at them.

• **SNAPPER:** Snapper is caught by a range of fishing methods throughout Australia, from the south of Qld right around to central WA. It is also imported from NZ. Most have been overfished in the past, and they are in various states of recovery. The Victorian stock is currently the healthiest and was accredited as sustainable by the Sustainable Australian Seafood Assessment Program (SASAP) in 2011. ..’
Recommended source material (continued):

- BARRAMUNDI: The Barramundi available to us in Australia comes from a range of sources. It may be imported farmed product, local wild, or local farmed. So how are we to decide which Barramundi we should be eating? The AMCS recommends that consumers ‘Say No’ to imported farmed Barra as well as local product that is the result of sea cage aquaculture, while advising that you ‘Think Twice’ about local fish from the wild or land-based farms. However, Cone Bay Barramundi, a product of sea cage aquaculture, has been identified as sustainable by the Sustainable Australian Seafood Assessment Program (SASAP) due to its best practice management and low environmental impact.

  – Sustainable Table: www.sustainabletable.org.au

‘Australia’s long-term commercial fish catch is estimated to be millions of tonnes more than what has been officially reported, analysis has found. A catch of more than 8 million tonnes has been reported for 1950–2010 to the United Nations Food and Agriculture Organisation. However, researchers from the University of British Columbia’s Fisheries Centre estimate that an extra 4 million tonnes of fish was caught in that period, although it was deemed to be “discards”:’

  – Australia’s commercial fishing industry catches millions of tonnes more than reported: researchers by Jake Sturmer, ABC Online, 21 May 2015: www.abc.net.au/news/2015-05-21/australia-commercial-fish-catch-bigger-than-official-reports/6485134

‘Look around at all the new sushi joints and the lobster roll trucks. We’re taking a heck of a lot of fish out of the sea. Luckily, the UN Food and Agriculture Organization (FAO), which tracks how many we’ve been catching, says catches have remained fairly stable for nearly two decades—a reassuring sign. But that’s probably wrong. Even way wrong. Over the last six decades, we’ve plucked at least 50% more fish from the ocean than official data told us, suggest data reconstructions by Daniel Pauly and Dirk Zeller of the University of British Columbia, in a Jan. 19 paper in Nature Communications. The researchers tracked a steep decline since the mid-1990s, which could mean seafood is growing scarcer, upping food security risks. In some places, we’re likely catching fish too quickly for them to replace themselves. The biggest absolute decline comes from industrial fishing. “We’re fishing harder, but getting less out of it,” explained Boris Worm, a marine ecologist at Dalhousie University, to Quartz. Worm is not affiliated with the study. “It’s like squeezing a lemon harder, but getting less juice out of it.” If that’s true, why doesn’t FAO data show the same deep drops in fish stocks? There are two forms of fishing, explains Worm. There’s the easily visible, documentable form reported by law–abiding fishermen to their regulators, which eventually finds its way into the FAO estimates. But there’s also a “hidden form”—for instance, illegally caught fish, or those landed by subsistence fishermen in poor countries...’
Lesson 4: Counting on Fish for the Future (continued)

Recommended source material (continued):

‘...Pauly and Zeller have undertaken what Worm calls “the Herculean task” of finding, estimating, and adding up six decades worth of that “hidden form.”

– We may be running out of fish far faster than we realized by Gwynn Guilford, Quartz, 19 January 2016: http://qz.com/597367/we-may-be-running-out-of-fish-far-faster-than-we-realized/

Teacher resources:


• National Geographic – Sustainable fishing: http://education.nationalgeographic.org/encyclopedia/sustainable-fishing/

• Nature news: www.nature.com/ncomms/2016/160119/ncomms10244/abs/ncomms10244.html


• Sustainable Table – These seafood species are OK to mindfully eat: http://sustainabletable.org.au/TableTalk/tabid/53/EntryId/122/These-seafood-species-are-O-K-to-mindfully-eat-Phew.aspx

Extension

Students RESEARCH and INVESTIGATE the “shark cull” in Western Australia in January 2014.

New research has found that sharks play an important role in preventing climate change. Scientists warn that overfishing and culling sharks is resulting in more carbon being released from the seafloor.

Students research current understandings about sharks’ role in marine ecosystems. Prompt them to brainstorm arguments both FOR and AGAINST the topic before they begin writing.

Explore the role myths and media play in making sharks an emotional topic (How many people actually die by shark attack each year?), an ethical issue (Is it ethical to cull an animal that plays a major role in the health of an ecosystem?) and a science concern (Could some marine ecosystems collapse without sharks? What does that mean for other species?)

Ask students to prepare an argument and debate the topic: Should sharks be culled?
Ask students first to reflect on the From Paddock to Plate Milk Virtual Video Excursion:

- Where does milk come from?
- What would it be like to live on a dairy farm?
- What can they say about the paddock to plate journey of Australian milk?
- What did they learn that they hadn’t considered before?
- What would they like to know more about the dairy industry in Australia?

**Facts and Vocabulary - Milk**

**Facts about the Australian milk industry**

- There are 6102 dairy farms in Australia. The national herd is 1.663 million dairy cows.  
  SOURCE: Dairy Australia, Australian Dairy Industry In Focus 2016.
- The average herd size has increased from 93 cows in 1985 to an estimated 284 currently. There is also a steady trend emerging to very large farm operations of more than 1,000 head of dairy cattle.  
  SOURCE: Dairy Australia, Australian Dairy Industry In Focus 2016.
- Australian dairy farmers produce 9,539 million litres of whole milk per year with the farmgate value of milk production being $4.3 billion.  
  SOURCE: Dairy Australia, Australian Dairy Industry In Focus 2016.
- The average milk production per farm has increased from 311,000 litres to 1,563,000 litres per year over the past 30 years.  
  SOURCE: Dairy Australia, Australian Dairy Industry In Focus 2016.
- Dairy farming employs about 38,000 people throughout Australia.  
  SOURCE: Dairy Australia, Australian Dairy Industry In Focus 2016.
- In terms of the utilisation of Australian milk in 2015–16, the share of volume produced is as follows: cheese (30%), skim milk or butter milk powder, (29%), drinking milk (26%), whole milk powder (6%), and other (9%).  
  SOURCE: Dairy Australia, Australian Dairy Industry In Focus 2016.
- Australia exports about 34% of its annual milk production.  
- Dairy is the third largest agricultural industry in Australia, worth $3 billion in exports in 2015–16.  
- Australia accounts for 6% of the world trade in dairy products, behind New Zealand (38%) the European Union (33%), and the United States of America (12%).  
  SOURCE: Dairy Australia, Australian Dairy Industry In Focus 2016.
Milk
Year 8  Stage 4

Useful words and phrases

- Baler
- Bovine
- Bulk tank
- Butterfat
- Calcium
- Calf
- Colostrum
- Combine
- Cultivator
- Curds
- Dairy cows
- Dairy plant
- Fluid milk
- Grain bin
- Harvester
- Hay
- Heifer
- Herbivore
- Holstein
- Homogenisation
- Industrial milk
- Jersey
- Lactose
- Mammal
- Milk claw
- Milk fat
- Milk house
- Milk solids
- Pasteurisation
- Pasture
- Pipeline
- Plow
- Processing plant
- Raw milk
- Ration
- Ruminants
- Silage
- Silo
- Teat
- Teat dip
- Udder
- Veterinarian
- Whey
Lesson 5
Milking it for Effect

Themes

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Getting started

Watch the From Paddock to Plate Milk Virtual Video Excursion with the class. Discuss some of the facts and vocabulary on the previous pages.

ASK: What sort of tone would students expect from a dairy farmer?

- Given the recent ‘milk wars’ where prices for milk dropped below production cost, how would they expect dairy farmers to portray themselves and their industry?
- Are there any moments of humour in the video?
- Do they talk about the cows as characters?
- What else did students notice about tone?

Students SOURCE and EVALUATE devices in the video that create tone (serious, bitter, sincere, amused).

If time permits, students choose one example and act it out in a way that conveys a completely different tone (e.g. serious instead of humourous, earnest instead of relaxed, etc.)

Show them how to IDENTIFY or JUDGE tone through experience and language clues. EXPLORE the added layer of sound and vision – how does the soundscape of the video and the imagery add to the tone and shape the viewer’s perception of the main ‘characters’?

Here are some examples:

“Our first cows will arrive at the dairy at 3:30am. A lot of them will start to make their own way up but we do go out and round up the lazy ones that don’t want to get out of bed… Basically you’re just extracting the milk from the cows with vacuum and pulsation. So, it gently squeezes or massages each teat to take the milk out.”

(4:45 – 6:21)
"A big part of the reason for doing dairy are reasons other than money. If you enjoy what you do then you are happy to go out and do it. I've got an uncle who is 86 years old. Every day he goes out there for reasons other than money, so I hope that I can do that as well. I think it is sustainable while you enjoy what you are doing. There is a commercial aspect to our business as well and you do need to make money and all the rest of it, but first and foremost if you enjoy what you do, you'll continue to make it work."

(6:53 – 7:05)

"You need a lot of skills to become a dairy farmer, but some really important things that you do need, one, is an alarm clock. That's the main one you need. The skills, well you pick them up as you go along. A big one is probably looking after cattle. The cornerstone to your business is making sure that your cows are well fed, well cared for, your calves are raised well and the people around you care what you do. I'm really lucky because I do have that."

(7:44 – 8:09)

"The imaging and branding of the packaging all started with a photo that I took of a cow called Heather out my kitchen window. She's become the icon cow for our company. She's actually a little bit mad but that's why she took a good photo because she was very responsive."

(9:42 – 9:57)

"Part of our work culture and when we bring people in, that food quality and food safety is absolutely paramount. We don't cut any corners and if anyone has any concerns about somebody taking short cuts, no one will tolerate it because it's just not what we do. We want to put what goes out that door into our own mouths, so that's how we treat it."

(11:30 – 12:13)

"I can't call it organic milk because we're not certified, but as with a lot of farmers in this area, we really respect our ground, our animals and everything about it so we're always looking for minimal intervention. We're looking for something that we would be proud to eat ourselves. We're not going to stack something off with chemicals and ship it off to someone else. It's exactly what we want on our kitchen tables."

(12:44 – 13:05)

"A dairy cow needs lots of water. A dairy cow drinks at least 200 litres of water a day. She likes lots of shade. She likes a bit of palm frond, you know, a little cooling because they don't like the heat at all. But most importantly they love grass so you need to have a lot of it."

(15:37 – 15:51)