

Sustainable dairy farming



An educational
resource for

**Years
5–6**

Discover Aussie Dairy

Learning areas and Australian curriculum content



Design and Technologies

Explain how and why food and fibre are produced in managed environments (AC9TDE6K03)

Explain how the characteristics of foods influence selection and preparation for healthy eating (AC9TDE6K04)

Negotiate design criteria including sustainability to evaluate design ideas, processes and solutions (AC9TDE6P04)

Science

Investigate the physical conditions of a habitat and analyse how the growth and survival of living things is affected by changing physical conditions (AC9S6U01)

Investigate how scientific knowledge is used by individuals and communities to identify problems, consider responses and make decisions (AC9S5H02)

Investigate how scientific knowledge is used by individuals and communities to identify problems, consider responses and make decisions (AC9S6H02)

Construct and use appropriate representations, including tables, graphs and visual or physical models, to organise and process data and information and describe patterns, trends and relationships (AC9S5I04) (AC9S6I04)

English

Use appropriate interaction skills including paraphrasing and questioning to clarify meaning, make connections to own experience, and present and justify an opinion or idea (AC9E5LY02)

Use interaction skills and awareness of formality when paraphrasing, questioning, clarifying and interrogating ideas, developing and supporting arguments, and sharing and evaluating information, experiences and opinions (AC9E6LY02)

Geography

The influence of people, including First Nations Australians and people in other countries, on the characteristics of a place (AC9HS5K04)

Evaluate information and data in a range of formats to identify and describe patterns and trends, or to infer relationships (AC9HS5S03) (AC9HS6S03)

Lesson Objective

Students will be introduced to dairy production in Australia through an immersive 360 degree virtual farm tour. They will discover the location of Australia's dairy production regions and use their geographical tools and skills to locate these regions on a map of Australia. Students will research the practices used on Australian dairy farms to care for the environment, sustainably manage resources, and maintain healthy farms and cows. Students will then design and create a 3D diorama to demonstrate their learning about sustainable dairy farming.

Lesson Overview

Activity 3.1 – Where are Australia's Dairy Production Regions? (30 mins)

Activity 3.2 – Sustainability in Australian Dairy Production (40 mins)

Activity 3.3 – Design a Sustainable Dairy Farm (60 mins)

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Risk assessments

Note: Schools are responsible for generating their own risk assessments for activities. Risk assessments should address the potential hazards associated with using dairy products in the classroom, including foodborne illnesses, allergies, slips/falls, and cross-contamination, and propose control measures such as allergy awareness, accident prevention, and hygiene practices to ensure a safe learning environment for students.

ATTRIBUTION, CREDIT & SHARING



This resource was produced by Primary Industries Education Foundation Australia (PIEFA) in collaboration with Dairy 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 Dairy 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.

Schools and users of this resource are responsible for generating their own risk assessments and for their own compliance, procedures and reporting related to the use of animals, equipment and other materials for educational purposes.



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Resources and equipment



Teacher
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Activity 3.1 – Where are Australia’s Dairy Production Regions?

- 1 Digital devices
- 2 [Pop Quiz | Discover Aussie Dairy](#)
- 3 [Discover Aussie Dairy 360 Virtual Farm Tour](#) (6:53)
- 4 [Map of Australia’s Dairy Regions Image | Discover Aussie Dairy](#)
- 5 [Where Dairy Farms are Located in Australia](#) (0:56)
- 6 **Worksheet 3.1a – Australia’s Dairy Production Regions**

Activity 3.2 – Sustainability in Australian Dairy Production

- 1 Digital devices
- 2 [Caring for the Environment on a Farm](#) (2:21)
- 3 [Dairy Sustainability | Discover Aussie Dairy](#)
- 4 **Worksheet 3.2a – Sustainability in Australian Dairy Production**
- 5 [Dairy Products & Sustainability – Dairy Australia](#)

Activity 3.3 – Design a Sustainable Dairy Farm

- 1 Digital devices
- 2 **Worksheet 3.3a – Design Challenge: Design a Sustainable Dairy Farm**
- 3 Cardboard/shoe boxes for diorama base
- 4 Diorama materials: paper, printed pictures, sticks, recycled materials, glue, sticky tape, scissors, etc.

Additional resources

- [Australian Dairy – Our Sustainability Promise and Commitments](#) (3:15)
- [Australian Dairy Sustainability Framework – Dairy Australia](#)
- [About the Australian Dairy industry – On the farm](#)

Lesson guide



Teacher
guide

Activity 3.1 – Where are Australia’s Dairy Production Regions?

Students will be introduced to dairy production through a 360 degree virtual farm tour. They will discover the location of Australia’s dairy production regions and use geographical tools and skills to locate these regions on a map of Australia.

- a Conduct an online quiz with students using **Pop Quiz | Discover Aussie Dairy** to determine their existing level of knowledge about dairy production in Australia.
- b View the video **Discover Aussie Dairy 360 Virtual Farm Tour** (6:53) to develop their interest and provide them with an overview of a dairy farm.
- c Introduce the location of dairy production regions in Australia by watching the video **Where Dairy Farms are Located in Australia** (0:56)
- d Project the **Map of Australia’s Dairy Regions Image | Discover Aussie Dairy** to show where Australia’s dairy farming areas are located.
- e Conduct a discussion with students by asking the following questions:
 - In which states and territories are dairy farms located in Australia?
 - Why are dairy farms situated in these locations?
 - Why are there no dairy farms in the Northern Territory? What does this mean for people living there? Where do they get their milk and other dairy products from? (Answers page 8)

Emphasise that dairy farms are typically located in medium to high rainfall areas, as dairy cows feed on native pastures and vegetation, as well as pastures that have been grown by the producer, which require high seasonal rainfall.

- f Distribute **Worksheet 3.1a – Australia’s Dairy Production Regions** and instruct students to use the projected map to mark the locations of the main dairy production regions in Australia. Zoom in on each state and territory where needed to help students locate each region. Remind students to fill in the key and use different colours for each region. (Answers page 8)
- g Once completed, instruct students to check their map with a partner for peer feedback.

Lesson guide



Teacher
guide

Activity 3.2 – Sustainability in Australian Dairy Production

Students will investigate and explore new and existing practices used on Australian dairy farms to care for the environment, sustainably manage resources, and maintain healthy farms and cows. They will research how dairy farmers address sustainability in the management of dairy production and its resources.

- a Introduce the topic of sustainability by conducting a discussion with students about the ways they care for the environment at school and/or home.

Ask questions such as:

- To what extent has our school considered reducing energy use?
- Has our school become more aware of where energy is used?
- Is our school taking steps to ensure that fans, lights and electrical appliances are turned off when not in use?
- Are we replacing or supplementing the school's energy supply with renewable energy sources such as solar energy?
- Does our school monitor water usage?
- Does our school add mulch to gardens to reduce water loss through evaporation?
- Do we have water conservation signs in the toilets, hand basins, sinks, showers and any other water outlets in and around school buildings?
- Are we reducing, reusing, and recycling classroom and school rubbish/waste?
- Does our school encourage waste-free lunches from home or the school canteen?
- Does our school compost fruit and vegetable food waste?

Ask similar questions to prompt thinking about what actions are undertaken at home.

- b View the video *Caring for the Environment on a Farm* (2:21)
- c Read through the information on *Caring for the Environment* | *Discover Aussie Dairy* as a class or individually.
- d Brainstorm a definition of sustainability with the class and record the definition in a central area. Discuss the differences between 'environmental sustainability', 'economic sustainability', and 'social sustainability'. For example:
- When a dairy farmer thinks of being economically sustainable, they might ask themselves a question such as, 'Are we sustainably profitable?' or 'What do we need to do to ensure that the dairy farm continues to provide a living for our family into the future?'
 - When a dairy farmer thinks of being socially sustainable, they might ask themselves questions such as, 'Are we behaving in a way that the community will be happy to support us into the future?' or 'How should we be involved in our community to ensure a mutually supportive relationship?'
 - When a dairy farmer thinks of being environmentally sustainable, they might ask themselves questions such as, 'Are we maintaining our farms and natural assets for future generations?' or 'How can we see and connect with the farm's natural habitat so that future dairy farmers can continue to succeed.'
- Expand the topic and discuss other sustainable practices used on dairy farms, such as irrigation practices, pasture rotations, waste management, water reuse, resource recovery, fencing off rivers and streams, and planting trees and shrubs near rivers to stop erosion.
- e Distribute **Worksheet 3.2a – Sustainability in Australian Dairy Production**. Instruct students to write a definition of sustainability in their own words.
- f Students use digital devices to access the link [Dairy Products & Sustainability – Dairy Australia](#) and complete the questions on the worksheet. Review answers with students once completed. (Answers page 9)

Lesson guide



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Activity 3.3 – Design a sustainable dairy farm

Students will design and create a 3D diorama to demonstrate their learning about how Australian dairy farms care for the environment, sustainably manage resources, and maintain healthy farms and cows.

Schools are responsible for carrying out risk assessments before this task.

- a Introduce students to the concept of making a 3D diorama. This task can be completed individually or in groups.
- b Distribute **Worksheet 3.3a – Design Challenge: Design a Sustainable Dairy Farm**.
Read through and explain the scenario:

You work at an advertising company that has been approached by Dairy Australia to create an amazing 3D sustainable dairy farm diorama. They want you to showcase how Australian dairy farmers use sustainable practices to care for cows, farms, and the environment. Your job is to bring this story to life in a diorama that teaches people about sustainability in a fun, creative way.
- c Read through each of the steps as a class.
- d Discuss the equipment that students will require for this task. If needed, assign students a homework task to bring in the materials they would like to use for their 3D diorama, such as a cardboard/shoe box for the base, paper, printed pictures, sticks, recycled materials, glue, sticky tape, scissors, etc.
- e Direct students to draw a plan of their diorama in the draft space before beginning their 3D version.
- f Once completed, students will answer the evaluation question on page two of the worksheet. They may wish to present their 3D diorama to the class, explaining how their dairy farm uses sustainable practices to care for cows, farms, and the environment.

Answers



Answer

Activity 3.1 – Where are Australia's Dairy Production Regions?

- e Gippsland, Murray, New South Wales, South Australia, Subtropical, Tasmania, Western Australia, Western Victoria.
- Dairy farms are located in these states and territories as they receive medium to high rainfall, which is needed to grow native and non-native pastures and vegetation for dairy cows to feed on.
 - The Northern Territory does not have the correct climatic conditions for dairy farming. It has a wet season, where there is too much rainfall for dairy farming, and a dry season, where there is not enough rainfall. These conditions make it difficult to maintain a consistent feed supply for dairy cows. The Northern Territory has a tropical climate with high temperatures and humidity, which is not ideal for dairy cattle. Dairy cows perform best in cooler climates because heat stress can reduce milk production and negatively affect their health and fertility.
 - Fresh milk needs to be transported to the Northern Territory from dairy production regions in other states, which often results in limited supply and high prices.
 - People in the Northern Territory purchase their dairy products from retail stores such as supermarkets, similar to other states and territories, but may have to purchase long-life dairy products in times of limited supply or high costs.

Worksheet 3.1a – Australia's dairy production regions

- f Student maps should have locations marked in similar locations to the map below with their key coloured/marked correctly for each region:



Answers



Answer

Activity 3.2 – Sustainability in Australian Dairy Production

Worksheet 3.1a – Australia's dairy production regions

- 1 Student responses will vary based on their own definitions.
- 2 The Australian dairy industry has made a number of sustainability commitments to the community, their people, the environment, and their animals. They have developed a Sustainability Framework as a guide to sustainable dairy production, with goals and targets set for 2030.
- 3
 - i) Provide the best care for all animals for the whole of life
(Framework Goal 7).
 - ii) Increase the competitiveness and profitability of the Australian dairy industry
(Framework Goal 1)

Increase the resilience and prosperity of dairy communities
(Framework Goal 2)

Provide a safe work environment for all dairy workers
(Framework Goal 3)

Provide a productive and rewarding work environment for all dairy workers
(Framework Goal 4)
 - iii) All dairy products and ingredients sold are safe
(Framework Goal 5)

Dairy contributes to improved health outcomes for all Australians
(Framework Goal 6)
 - iv) Improve land management (Framework Goal 8)

Increase water use efficiency (Framework Goal 9)

Reduce greenhouse gas emissions intensity (Framework Goal 10)

Reduce waste (Framework Goal 11)

References



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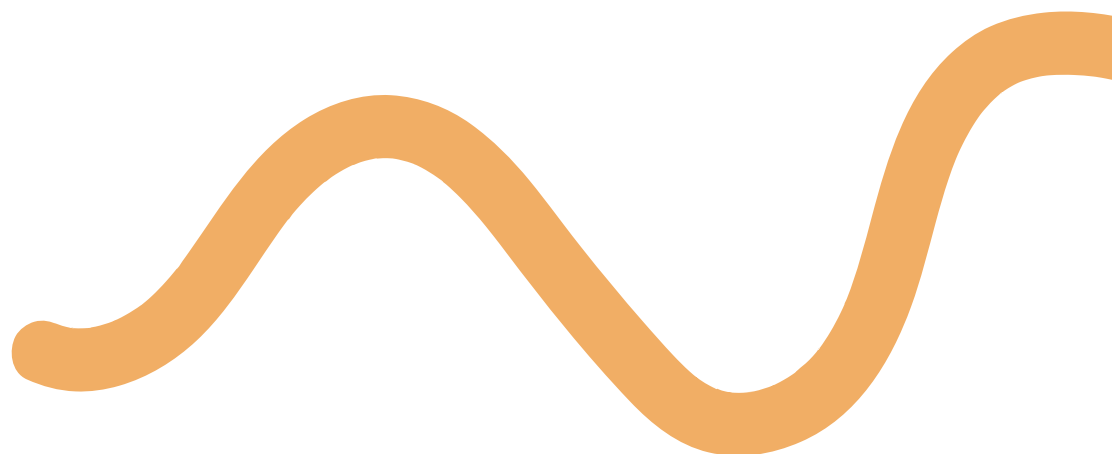
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Worksheet 3.1a

Australia's dairy production regions



Australia has 3800 dairy farms spread across eight unique dairying regions. On the map of Australia, mark where the main dairy production regions are located. Use a different colour for marking each region and complete the key.



Dairy regions

- | | |
|--|--|
| ☐ Gippsland | ☐ Subtropical |
| ☐ Murray | ☐ Tasmania |
| ☐ New South Wales | ☐ Western Australia |
| ☐ South Australia | ☐ Western Victoria |

Worksheet 3.2a

Sustainability in Australian Dairy Production



1 Define the term 'sustainability' in your own words.

Visit Dairy Australia's website at Dairy Australia Sustainability, dairy.com.au/sustainability to answer the following question:

2 What has the Australian dairy industry put in place to overcome the sustainability challenges it faces?

3 Click on each of the sustainability focus areas from Dairy Australia Sustainability, dairy.com.au/sustainability to answer the questions below:



ANIMAL CARE

Caring for our livestock and striving to always do it better is the Australian dairy way.

i Animal care

What is the 2030 goal for animal care in the Australian Dairy Industry Sustainability Framework?



Worksheet 3.2a

Sustainability in Australian Dairy Production



LIVELIHOODS

We are committed to creating a vibrant industry that rewards dairy workers and their communities.

ii Livelihoods

What are the four 2030 goals for enhancing livelihoods in the Australian Dairy Industry Sustainability Framework?

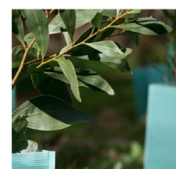


WELLBEING

The industry is committed to people's health and wellbeing by producing quality, nutritious and safe dairy food.

iii Wellbeing

What are the two 2030 goals for improving wellbeing in the Australian Dairy Industry Sustainability Framework?



ENVIRONMENT

Our mission is to meet the challenge of climate change and provide good stewardship of our natural resources.

iv Environment

What are the four 2030 goals for reducing environmental impact in the Australian Dairy Industry Sustainability Framework?

Worksheet 3.3a



Design challenge: Design a sustainable dairy farm

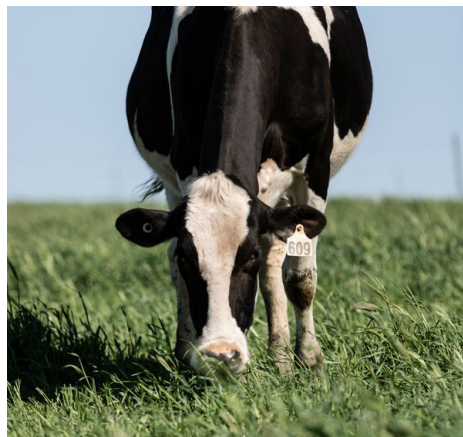


Scenario

You work at an advertising company that has been approached by Dairy Australia to create an amazing 3D sustainable dairy farm diorama. They want you to showcase how Australian dairy farmers use sustainable practices to care for cows, farms, and the environment. Your job is to bring this story to life in a diorama that teaches people about sustainability in a fun and creative way.

Your 3D sustainable dairy farm diorama needs to show the following:

- ✓ What dairy cows need to grow, stay healthy, and produce milk.
- ✓ How Australian dairy farmers maintain healthy farms, raise and produce dairy cows, and care for the environment.
- ✓ The sustainable practices used on Australian dairy farms. Use labels to identify key aspects of the farm (e.g. "Solar panel," "Compost bin").
- ✓ **Optional:** Add small fact cards that explain the sustainable practices in action. For example, "This dam collects rainwater to provide cows with fresh water", "Solar panels power the shed lights", or "Cows eat grass and hay to stay healthy and produce milk."



Worksheet 3.3a



Activity

Design challenge: Design a sustainable dairy farm

Plan your 3D sustainable dairy farm diorama in the space below.

Evaluation: What would you do to improve your diorama next time?



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