



**Australian Government**  
**Department of Agriculture,  
Fisheries and Forestry**

# Biosecurity champions

Teacher guide – Year 4





# Learning areas and Australian Curriculum content

## Design and Technologies

Describe the ways of producing food and fibre ([AC9TDE4K03](#)).

## English

Listen for key points and information to carry out tasks and contribute to discussions, acknowledging another opinion, linking a response to the topic, and sharing and extending ideas and information ([AC9E4LY02](#)).

Use comprehension strategies such as visualising, predicting, connecting, summarising, monitoring and questioning to build literal and inferred meaning, to expand topic knowledge and ideas, and evaluate texts ([AC9E4LY05](#)).

## Humanities and Social Sciences

The importance of environments, including natural vegetation and water sources, to people and animals in Australia and on other continents ([AC9HS4K05](#)).

Develop questions to guide investigations about people, events, places and issues ([AC9HS4S01](#)).

Locate, collect and record information and data from a range of sources, including annotated timelines and maps ([AC9HS4S02](#)).

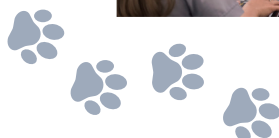
Interpret information and data displayed in different formats ([AC9HS4S03](#)).

Propose actions or responses to an issue or challenge that consider possible effects of actions ([AC9HS4S06](#)).

## Science

Consider how people use scientific explanations to meet a need or solve a problem ([AC9S4H02](#)).





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## Lesson objective

Students learn how pests and diseases spread and the role biosecurity measures play in preventing these threats in Australia. Through engaging discussions prompted by images, videos and worksheets, students will grasp why biosecurity is fundamental to safeguarding Australia’s environment, human health and economy. This activity emphasises the significance of biosecurity in agricultural settings. Students will explore how biosecurity measures prevent the spread of pests and diseases on farms, learning through a scenario-based approach. They will engage in group discussions, develop a biosecurity management plan using action cards and create educational bookmarks summarising key biosecurity concepts. Students will engage in a biosecurity challenge, which highlights some of the biosecurity considerations necessary when hosting international events. The challenge is structured to cater to various learning levels and encourages comprehensive engagement and teamwork.

## Lesson overview

**Activity 1 – Pests, diseases and biosecurity (20 to 30 mins)**

**Activity 2 – Biosecurity on the farm (40 mins)**

**Activity 3 – Biosecurity challenge (60 mins)**



## Success criteria

### 1. Understand and explain biosecurity basics

I can explain what biosecurity is and why it is important for protecting Australia's environment, agriculture and health from pests and diseases.

### 2. Identify biosecurity measures on farms

I can list and describe specific biosecurity measures that farmers implement to protect crops and livestock from pests and diseases.

### 3. Apply biosecurity knowledge in practical scenarios

I can apply my knowledge of biosecurity to develop a management plan for a farm scenario, demonstrating how to prevent the spread of pests and diseases.

### 4. Collaborate and participate in the biosecurity challenge

I can actively participate in the biosecurity challenge, collaborating with peers to solve biosecurity-related problems and demonstrate comprehensive understanding through various learning activities.

## Additional information

### Junior Biosecurity Officer certificate

Students colour a paw print on the [Junior Biosecurity Officer certificate](#) for each completed activity, visually tracking their learning journey with Frankie the biosecurity detector dog.

### Take home challenge

Students become biosecurity champion 'graduates' by completing the [take home challenge](#). They can test their carer's knowledge by quizzing them on biosecurity trivia and interviewing them about their experiences with biosecurity rules and regulations.

### Biosecurity poster (assessment)

The [biosecurity awareness campaign poster](#) for Year 2 to 5 invites students to create an educational poster on the importance of biosecurity, incorporating interactive elements like flaps, pop-ups and QR codes. This activity enhances understanding through creative engagement. A [marking rubric](#) is available for teachers.

### Surveys and feedback

The [student survey](#) may be used for students to assess understanding pre- and post-lesson, while the [teacher survey](#), available online, gathers feedback from educators about student performance and resource value.

## Resources and equipment



### Activity 1 – Pests, diseases and biosecurity

1. **Worksheet 1a – Stimulus images: at the airport**
2. [Australia’s biosecurity – DAFF \(1:46\)](#)
3. [Our biosecurity detector dogs safeguarding Australia \(2:52\)](#)
4. **Worksheet 1b – Fact sheet: pests, diseases and biosecurity**
5. **Worksheet 1c – Sentences: pests, diseases and biosecurity**



### Activity 2 – Biosecurity on the farm

1. Butchers paper, markers
2. **Worksheet 2a – Farm manager biosecurity action cards**
3. **Worksheet 2b – Farm manager biosecurity template cards**
4. Digital devices
5. **Worksheet 2c – Biosecurity bookmarks**
6. Scissors, laminator



### Activity 3 – Biosecurity challenge



1. [You can be a Biosecurity Champion too!](#)
2. [Travellers and Tourists \(3:25\)](#)
3. [Keep it out \(1:53\)](#)
4. **Worksheet 3a – Biosecurity challenge**
5. **Worksheet 3b – Biosecurity challenge answer sheet**
6. Timer, playdough, matchsticks, scissors, ruler, pipe cleaners, paper
7. Digital devices



## Lesson guide

### Activity 1 – Pests, diseases and biosecurity

Students will explore pests and diseases and how they spread. Through class discussions and interactive activities, students will understand how important biosecurity is to prevent the entry and spread of biosecurity threats in Australia and why these measures are crucial for safeguarding Australia's environment, plants and animals, human health, jobs, the economy and our way of life.

1. Project or distribute copies of **Worksheet 1a – Stimulus images: at the airport** to generate a discussion about what is happening in the image. Pose questions to students such as:
  - What do you think is happening in this scene?
  - Who is the person in the uniform?
  - Why do you think this is happening?
  - What might happen if this action was not performed?
2. If suitable, encourage a class discussion about students' experiences with overseas travel and ask them if they have noticed what procedures are in place when they enter and exit Australia. Focus on biosecurity procedures (such as disposing of fruit in biosecurity bins, asking where they have travelled and declaring items such as food and wood products), rather than immigration. Promote a discussion on why Australia has these procedures in place to prevent the entry of pests and diseases and the threats they may pose if they were to enter the country.
3. Introduce the term biosecurity by writing 'Biosecurity' in a central area, leaving a space between 'bio' and 'security'. Encourage a class discussion to define the two and then the entire word. Record student responses. **Answers page 10** 
4. View the video **Australia's biosecurity – DAFF** (1:46) to learn about Australia's biosecurity systems and how important it is to be protected from pests and diseases.
5. Optional: view the video **Our biosecurity detector dogs safeguarding Australia** (2:52) to learn about the work biosecurity detector dogs do at seaports, airports and mail centres to detect biosecurity risks.
6. Distribute **Worksheet 1b – Fact sheet: pests, diseases and biosecurity**. Students read the information either individually, in small groups or as a class. Then, they use the information to complete the sentences on **Worksheet 1c – Sentences: pests, diseases and biosecurity**.
7. Project the worksheet answers and discuss student responses. **Answers page 10** 



## Activity 2 – Biosecurity on the farm

Students will understand the importance of biosecurity measures in preventing the spread of pests and diseases on farms. They will learn practical steps to protect farm animals and crops by creating and implementing solutions to biosecurity problems/scenarios.

1. Write 'Biosecurity on the farm' in a central area. Allocate students into groups of four and provide each student with butchers paper and a marker. Set a timer for five minutes and ask students to record their ideas about the following questions.
  - Why is biosecurity important on farms?
  - What would be some of the consequences of farmers not knowing what biosecurity is?
  - What do you think a 'Biosecurity Management Plan' is?
2. Allow time for students to share their ideas with the class.
3. Provide groups with one copy of **Worksheet 2a – Farm manager biosecurity action**. As a class, read the information and introduce the scenario on page one. Provide students with scissors and ask them to cut out all eight action cards and distribute them equally amongst the group.
4. Students follow the instructions on the cards, starting with Action card 1. They must complete the actions and record their responses on **Worksheet 2b – Farm manager biosecurity template cards** before moving to the next card.

*Note: some template cards require the use of a digital device for research.*

**Suggested answers page 11** 

5. After completing the cards, each group shares their biosecurity plan, and individual students design a series of three bookmarks on **Worksheet 2c – Biosecurity bookmarks** summarising an area of biosecurity from either Activity 1 or Activity 2.



### Activity 3 – Biosecurity challenge

Students will participate in the biosecurity challenge, a collaborative activity centred on the importance of biosecurity in the context of hosting international events. This group challenge combines competitive elements with scenarios requiring teamwork, problem-solving and a deep understanding of the importance of protecting Australia’s people and environment. Each event is designed to accommodate various learning styles, fostering a sense of achievement and responsibility among participants. Depending on the literacy and comprehension skills of the class, teachers may choose to access this activity (Activity 3 – Biosecurity challenge) from either the Year 3, 4 or 5 resources. Complexity of the biosecurity challenge varies according to year level.

1. As a class, view the video content from the website [You can be a Biosecurity Champion too!](#) Go to the video presented by Catrina Rowntree, [Travellers and Tourists \(3:25\)](#) and [Xylella and exotic vectors \(scroll to the Keep it out video focused on Xylella fastidiosa \(1:53\)\)](#) to introduce/remind students about the importance of tourists and travellers keeping Australia safe from exotic pests and diseases.
2. Allocate students into groups of two to five, considering year level, literacy and comprehension skills.
3. Determine the appropriate version (Year 3, 4 or 5), challenge type (A or B) and distribution option (i, ii or iii) for each class.

Version	Description
<b>Year 3</b> Two–three questions per event	Recommended for years 3–4 classes with mixed literacy and comprehension skills. Ideal for students who need guidance in research, group collaboration and recording responses.

<b>Year 4</b> Four questions per event	Best suited for years 3–4 or classes with more developed literacy and comprehension skills. Designed for students capable of independent research and collaborative work.
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<b>Year 5</b> Five questions per event	Best suited for years 4–5 or classes with more developed literacy and comprehension skills. Designed for students capable of independent research and collaborative work.
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Challenge type	Description
<b>A</b> Time challenge	Groups record start and finish times, competing with other groups to complete the challenge in the shortest time.
<b>B</b> Class challenge	The class works together, completing challenges to collect coloured paw prints as a unit.

Distribution option	Description
<b>i</b> One to five	Distribute the first event of the biosecurity challenge to each group. As students complete each event, a new event is collected until all five events have been completed.
<b>ii</b> Random	Assign each group a randomly selected event page. As students complete each event, a new event is collected until all five events have been completed.
<b>iii</b> All five	Provide each group with all five event pages. Groups complete all events in any order until all five events have been completed.





4. Project or distribute the introductory page of **Worksheet 3a – Biosecurity challenge** for students to observe. As a class, read the instructions detailing the different events that groups will complete:
  - Event 1 Rapid response multiple choice quiz.** Quick-fire questions to kickstart your adventure, challenging your knowledge and speed.
  - Event 2 Teamwork trek.** Work together to navigate through complex problems that test both your teamwork and biosecurity understanding.
  - Event 3 True or false trivia.** Sharpen your accuracy with rapid true or false decisions that require keen judgement.
  - Event 4 Problem-solving puzzle.** Engage in a series of diverse challenges that demand strategic thinking and effective communication.
  - Event 5 Research raid.** Uncover essential information to improve our defences.
5. Answer any questions from students to ensure clarity and understanding of the tasks.
6. Distribute **Worksheet 3b – Biosecurity challenge answer sheet** to each group.

*Note: ensure students have access to digital devices, paper and rulers to complete Event 5: Research raid.*
7. Encourage students to collaborate and share ideas openly while solving the event questions presented on the worksheets. If groups are working on one event at a time (distribution option i or ii), they should return the completed questions to a central area and collect the next set of event questions until all events are complete. Ensure that the groups collect all five coloured paw prints.
8. At the end of the challenge, provide groups with examples of suggested responses, discuss any questions, and if applicable, recognise a winning group based on time (challenge type A) or performance and teamwork. **Answers page 12** 



## Answers

### ③ Activity 1 – Pests, diseases and biosecurity

3. Bio – means living, like a person, plant or animal.

Security – means to keep things safe.

Biosecurity is all about keeping living things (people, livestock, pets, animals, plants, and crops for food and fibre) safe from harmful pests and diseases. Biosecurity involves measures to prevent the entry and spread of pests and diseases into Australia.

### Worksheet 1c – Sentences: pests, diseases and biosecurity

1. Biosecurity involves measures to prevent the **entry** and **spread** of pests and diseases into Australia.
2. Brown marmorated stink bug.
3. Indigenous rangers' knowledge of **Country** enables them to protect Australian borders from biosecurity risks.
4. Department of Agriculture, Fisheries and Forestry (DAFF) or the Australian Government.
5. Pathogens.
6.
  - 1 The environment, native plants and animals.
  - 2 Plants and animals that produce food and fibre.
  - 3 Human health.
  - 4 Jobs and the economy.
  - 5 Our way of life.
7. Answers will vary. A strong biosecurity system means that all people, our environment, plants and animals and our way of life are protected from the threat of exotic pests and diseases.
8. Throw it in the special biosecurity bins or declare it on an Incoming Passenger Card because biosecurity officers may need to inspect it.
9. We all have a **role** to play in protecting Australia's biosecurity, including government agencies, industry and members of the public.



## Activity 2 – Biosecurity on the farm

### Worksheet 2b – Farm manager biosecurity template cards

1. Suggested answers:

#### Template card 1: Biosecurity training

Biosecurity refers to the measures and precautions taken to protect against the introduction and spread of harmful organisms to animals, plants and humans, aiming to prevent disease outbreaks and environmental damage. Biosecurity encompasses everything from farm hygiene and animal health checks to the regulation of imports and exports to prevent disease transmission.

#### Template card 2: Check fencing and borders

In Australia, animals like small birds, possums, bandicoots and insects are capable of fitting through fences due to their small size and agility, often navigating barriers with ease to explore or find resources.

#### Template card 3: Animal health record

Australia has approximately 25 million cattle, 70 million sheep and 2.5 million pigs (2024 data).

#### Template card 4: Quarantine area setup

Animals arriving from overseas are subject to quarantine periods that vary depending on the type of animal and the country of origin. For example, cats and dogs from approved countries must typically undergo a quarantine of at least 10 days in Australia. However, horses can be required to stay in quarantine for a minimum of 14 days, and livestock such as cattle and sheep may face quarantine periods that range from 10 to 30 days, depending on health assessments and biosecurity risk evaluations.

#### Template card 5: Learning to identify key symptoms

Farmers with large, extensive farms or those who manage a large number of livestock may find it harder to spot symptoms of illness in their animals because they may not be able to monitor each animal closely or regularly. Additionally, the vast area and large herd sizes can dilute individual attention, making it difficult to identify and respond to signs of disease or distress quickly.

#### Template card 6: Collaboration with an expert

1. What specific measures should I take to prevent this bacterial threat from entering and spreading on my farm?
2. Can you recommend any current treatments or vaccines that are effective against this bacteria and suitable for use on my livestock?

#### Template card 7: Emergency plan review

1. Plans for isolating infected animals to prevent the spread of the bacteria to healthy stock.
2. Rules for disinfecting equipment and guidelines for people about protective measures and hygiene practices.

#### Template card 8: Collaborating with others

Answers will depend on individual student groups.



## ➤ Activity 3 – Biosecurity challenge

### Event 1: Rapid response multiple choice quiz

Question 1: B

Question 2: B

Question 3: B

Question 4: A

### Event 2: Teamwork trek

Suggested answers could include:

#### Obstacle 1

##### Crop damage

These pests may directly damage crops by feeding on them, leading to reduced yields/production of essential food crops like fruits, vegetables and grains. This can result in shortages and increased food prices.

##### Spread of plant diseases

Insects often act as vectors or carriers for plant diseases. They can rapidly spread diseases that were not previously present, further reducing the productivity of agricultural areas.

##### Increased use of pesticides

To combat the new threat posed by these pests, farmers might need to increase their use of pesticides. This could lead to higher production costs, potential health risks for consumers and wildlife, and possibly affect the quality of the food produced.

#### Obstacle 2

##### Loss of biodiversity

Native plants form the foundation of local ecosystems, supporting a variety of wildlife, including insects, birds and mammals. If these plants are outcompeted and displaced, it could lead to a decline in native biodiversity, disrupting ecological balance.

##### Alteration of ecosystem functions

Native plants play critical roles in their ecosystems, such as maintaining soil health, regulating water cycles and preventing erosion. The invasive plant could alter these essential ecological functions, leading to long-term environmental degradation, which could affect water quality, soil fertility and the overall health of the ecosystem.



### Obstacle 3

#### Enhanced biosecurity and screening procedures

Implement strict biosecurity measures for all incoming animals and livestock, including thorough health screenings at ports of entry. This would help detect and isolate any potentially diseased animals before they enter the general population.

#### Travel and import restrictions

Temporarily restrict or closely monitor the importation of animals and animal products from regions currently experiencing outbreaks of the disease. This could involve suspending imports or implementing additional certification and testing requirements for incoming livestock.

#### Rapid response and containment teams

Establish dedicated rapid response teams that are ready to act quickly in case an infection is detected. These teams would be responsible for the containment management and disinfection of affected areas to prevent the spread of the disease to the wider livestock population and beyond.

### Obstacle 4

Answers will vary for this activity.

### Event 3: True or false trivia

Question 1: True

Question 2: True

Question 3: False

Question 4: False

### Event 4: Problem-solving puzzle

#### Problem 1

Suggested answers could include:

#### Things you should do:

- Check what goods you can bring into Australia on the Australian Department of Agriculture, Fisheries and Forestry website.
- Declare if you are carrying a certain food, plant material or animal product on your Incoming Passenger Card.
- Take the item to be assessed by a biosecurity officer when you arrive in Australia.

#### Things you should not do:

- Proceed through border control without declaring the item.
- Hide the item in your luggage.
- Attempt to bypass biosecurity checks by using a different exit.

**Problem 2****Implement movement controls**

Quickly establish controls on the movement of animals and animal products within and around the affected area to prevent the disease from spreading to other farms or regions. This could include roadblocks or checkpoints to monitor and regulate the transport of livestock.

**Enhance surveillance and reporting**

Increase surveillance and encourage prompt reporting of any unusual sickness in animals from farms in and around the affected area. This would involve veterinary checks and possibly setting up a hotline or online reporting system for farmers to quickly communicate any suspicious symptoms or livestock deaths.

**Problem 3****Immediate assessment and monitoring**

Identify the unfamiliar species and their potential impact on the local marine ecosystem. Set up ongoing monitoring programs to track their spread and behaviour and assess their interactions with native marine life.

**Containment and management strategies**

Develop and implement containment strategies to prevent the spread of these non-native species into broader areas. This could include physical barriers or targeted removals where feasible. Additionally, management strategies such as adjusting water sports activities to minimise disturbance and potential spread of these species should be considered.

**Problem 4**

Answers will vary but could include:

**1. Gloves**

Protect the hands of cleaning and maintenance staff, allowing them to handle waste and potentially contaminated items safely. This helps prevent the direct contact and transmission of pathogens, enhancing the safety and hygiene of the cleanup process.

**2. Bin systems**

Encourage attendees to dispose of their waste properly. Placing clearly labelled bins (recyclable, compostable, non-recyclable) throughout the venue facilitates waste segregation and reduces the likelihood of cross-contamination and overflow (potentially encouraging pests), keeping the venue cleaner and more sanitary.

**3. Rubbish trucks**

Essential for the efficient removal of accumulated waste from the venue. Regularly scheduled waste collection by these trucks ensures that waste does not build up at the venue, which could otherwise lead to unsanitary conditions and attract pests.

**4. Masks**

Protecting the respiratory health of staff working within waste management is crucial, especially in areas where dust or potentially infectious aerosols might be present. This protective measure helps prevent the inhalation of harmful substances and contributes to maintaining health standards during the event.

**5. Chemical sprays**

These sprays are used to disinfect surfaces and areas that are frequently touched or are likely to be contaminated by waste and spills. Regular application helps kill bacteria and viruses that could lead to disease, ensuring a hygienic environment for both attendees and staff.

## Event 5: Research raid

### Task 1

The five Olympic rings are a well-recognised symbol designed to represent the unity of the five inhabited continents (Africa, America, Asia, Europe and Oceania) coming together in the Olympic movement.

#### Designer

Baron Pierre de Coubertin, who founded the modern Olympic Games, also designed the rings.

#### Date designed

The design was completed in 1913.

#### Representation

Each of the five interlocking rings is coloured differently (blue, yellow, black, green and red) on a white background. These colours were chosen because at least one colour appeared on the flag of every country in the world at that time. The interlocking nature of the rings symbolises the coming together of athletes from across the world to compete in the Olympic Games, promoting a spirit of global unity and friendship.

### Task 2

Suggested answers could include:

#### Witchweed (*Striga spp.*)

##### Agricultural impact

Witchweed is a parasitic plant that attaches to the roots of various agricultural crops, including corn, sorghum and sugarcane. It saps nutrients from these crops, severely stunting their growth and significantly reducing yields. This could lead to massive agricultural losses.

##### Environmental impact

Although primarily an agricultural threat, if introduced, Witchweed could spread to native ecosystems, attaching to native plants and disrupting local biodiversity.

#### *Xylella fastidiosa*

##### Agricultural impact

*Xylella fastidiosa* is a bacterial pathogen that affects over 660 plant species by blocking the water transport system. It causes symptoms like leaf scorch, wilt, dieback and eventual death. Its introduction could devastate industries such as viticulture, citrus, olive and almond.

##### Environmental impact

*Xylella fastidiosa* could infect native trees and plants, altering ecosystem structure and function and potentially leading to severe ecological consequences similar to those in other affected regions, such as Europe and the Americas.

### Task 3

Students model the organism, for example, by using a ruler to measure paper/playdough and creating a shield-shaped body for the brown marmorated stink bug model, ensuring it measures between 1.5 and 1.7 cm in length. Students could also consider the bug's natural colour patterns, incorporate them into the design, and use matchsticks to craft six proportional legs. For the antennae, find a suitable material like thin wire or stiff paper strips to represent their distinct banded appearance accurately.



Brown marmorated stink bug

Image: © Department of Agriculture, Fisheries and Forestry



**Task 4**

The pathogen SARS-CoV-2, responsible for COVID-19, spread to Australia as a result of global travel. This virus has significant effects on human health, ranging from mild symptoms like cough and fever to severe respiratory distress and even death. Additionally, long-term effects known as 'long COVID' include fatigue, cognitive impairments and ongoing respiratory difficulties, impacting many who recover from the initial infection.





## References

### Activity 1

DAFF 2023a, [\*Australia's biosecurity\*](#), Department of Agriculture, Fisheries and Forestry, Canberra, accessed 21 August 2024.

DAFF 2024a, [\*Be a Junior Biosecurity Officer\*](#), Department of Agriculture, Fisheries and Forestry, Canberra, accessed 21 August 2024.

Department of Agriculture 2019, [\*Our biosecurity detector dogs safeguarding Australia \[YouTube\]\*](#), Canberra, accessed 21 August 2024.

### Activity 2

DAFF 2023b, [\*Biosecurity matters\*](#), Department of Agriculture, Fisheries and Forestry, Canberra, accessed 21 August 2024.

DAFF 2024b, [\*Become a biosecurity officer\*](#), Department of Agriculture, Fisheries and Forestry, Canberra, accessed 21 August 2024.

Department of Agriculture and Water Resources 2019, [\*Country Handle with Care – Episode 6 Protecting Country \[YouTube\]\*](#), Canberra, accessed 21 August 2024.

### Activity 3

DAFF 2022, [\*Brown marmorated stink bug\*](#), Department of Agriculture, Fisheries and Forestry, Canberra, accessed 21 August 2024.

DAFF 2023c, [\*Xylella and exotic vectors\*](#), Department of Agriculture, Fisheries and Forestry, Canberra, accessed 21 August 2024.

DAFF 2024c, [\*Catriona Rowntree – Travellers and Tourists\*](#), Department of Agriculture, Fisheries and Forestry, Canberra, accessed 21 August 2024.

DAFF 2024d, [\*You can be a Biosecurity Champion too!\*](#), Department of Agriculture, Fisheries and Forestry, Canberra, accessed 21 August 2024.



## Other resources

DAFF 2023d, *Biosecurity Innovation Program*, Department of Agriculture, Fisheries and Forestry, Canberra, accessed 21 August 2024.

DAFF 2023e, *Country Handle with Care – Costa and dirtgirl Tackle Biosecurity*, Department of Agriculture, Fisheries and Forestry, Canberra, accessed 21 August 2024.

DAFF 2023f, *Innovation Pilots Initiative*, Department of Agriculture, Fisheries and Forestry, accessed 21 August 2024.

DAFF 2023g, *Pests, diseases and weeds*, Department of Agriculture, Fisheries and Forestry, Canberra, accessed 21 August 2024.

DAFF 2024e, *Sending or ordering goods online from outside Australia*, Department of Agriculture, Fisheries and Forestry, Canberra, accessed 21 August 2024.

DAFF 2024f, *Llamas gene pool expands*, Department of Agriculture, Fisheries and Forestry, Canberra, accessed 21 August 2024.

Department of Agriculture and Water Resources 2017, *Frontline – Indigenous Biosecurity Rangers [YouTube]*, Canberra, accessed 21 August 2024.

Department of Agriculture, Water and the Environment 2019, *Australia's National Priority Plant Pests (NPPP) playing cards: Beastie the Bug and novel coronavirus 2019 version [PDF 2040KB]*, accessed 21 August 2024.



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# Biosecurity champions

Student activities – Year 4



## Activity 1: worksheet 1a – stimulus images At the airport



Images: © Department of Agriculture, Fisheries and Forestry

## Activity 1: worksheet 1b – fact sheet

# Pests, diseases and biosecurity



### Did you know?

We all have a role to play in protecting Australia's biosecurity. Travellers entering Australia must declare certain items, such as food, plants and animal products.

### Read the following information text.

Australia is free from many of the world's most damaging plant and animal pests and diseases. Pests and diseases not native to Australia could damage our environment, destroy our food production and change our way of life. Australia's biosecurity system helps protect us from these pests and diseases.

### What is a pest?

A pest is an unwanted living thing that can damage plants, animals or people, and spread diseases.

- Australia has a number of pests, such as cane toads that poison animals that try to eat them.
- Australia is trying to keep out other pests like the brown marmorated stink bug. If it came to Australia, it could quickly become a big problem for farmers because it eats hundreds of different types of plants and isn't easy to kill. It smells really bad too!



Cane toad



Brown marmorated stink bug

Image: © Department of Agriculture, Fisheries and Forestry

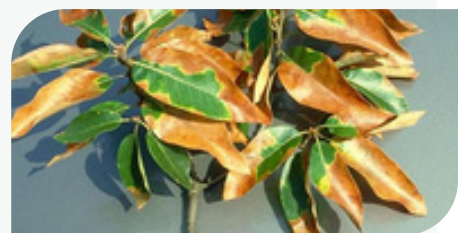
### What is a disease?

A disease causes a living thing to become unwell. Diseases are caused by bacteria, fungi or viruses, which we call pathogens.

- Citrus canker is a disease that affects citrus trees, making their leaves and fruit bumpy and ruining them. It is not present in Australia.
- Australia is trying to keep out other diseases, such as *Xylella fastidiosa* (pronounced zy-LEL-lah fas-tid-ee-OH-sah). *Xylella fastidiosa* kills many species of plants, grapes and pears. There is no cure.



Citrus canker



*Xylella fastidiosa* infected leaves

Image: © John Hartman, University of Kentucky, bugwood.org

## How do pests and diseases spread?

Pests can walk, fly, crawl or hop from one place to another, spreading diseases. People can also accidentally help pests and diseases spread when they travel, bringing food and other items like seeds, wood and dirt from other countries back to Australia. These things might have tiny pests and diseases hidden in them.

Pests and diseases can also hitch a ride on vehicles, ships, aeroplanes or in shipping containers on a boat.



1. Things made from wood can carry pests and disease



2. Dirt on shoes can carry pests and disease



3. Animal products such as meat can carry pests and disease



4. Fruit and vegetables can carry pests and disease

Images: 1, 3 and 4: © Department of Agriculture, Fisheries and Forestry

## How can we protect Australia?

If we know how pests and diseases can enter our country, we can take measures to keep them out and stop them from spreading if they do.

This is known as biosecurity, and it involves following rules and strategies to prevent the entry and spread of pests and diseases.

Biosecurity involves careful inspection of:

- luggage
- mail
- cargo
- imported goods

checking for any items such as seeds, plants, wood, meat, fruit and vegetables that might contain pests and diseases that Australia is trying to keep out.

Biosecurity detector dogs and technology such as X-ray machines are used to detect many items that may contain pests and diseases. Biosecurity officers can then inspect these items for unwanted pests and diseases.



Images: Department of Agriculture, Fisheries and Forestry



Spot the robot dog



3D X-ray

Images: © Department of Agriculture, Fisheries and Forestry

## Why should you care about biosecurity?

Some items brought into Australia need to be declared on an Incoming Passenger Card if entering Australia by plane or ship. At the airport, you may have seen special biosecurity bins available to dispose of food and other risk items.

Biosecurity officers may need to inspect some of the things you bring with you. If any biosecurity risk items are found, they may need to be treated, exported from Australia or destroyed. There are penalties for those who do the wrong thing when travelling to Australia or when ordering goods online.

The Australian Government works with other countries to manage biosecurity risks before they arrive in Australia.

## Why does Australia have biosecurity?

- 1 Protecting our **environment** and **native plants** and **animals** is important. Introduced pests or diseases can destroy habitats and reduce biodiversity.



Image: © Department of Agriculture, Fisheries and Forestry

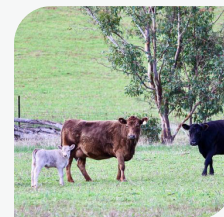


Image: © Matt Dunn

- 2 Protecting our **crops** and **livestock** that produce food and fibre is important.



Images: © Kat Allia



- 3 It is important to protect **jobs** and our **economy**.

- 4 It is important to protect **human health**. Some pests and diseases can affect humans and make them sick.



- 5 It is important to protect **our way of life**.

## Who is in charge of biosecurity?

The Department of Agriculture, Fisheries and Forestry (DAFF) manages the threat of biosecurity risks to Australia. State and territory governments also play a part.

Many others, including Indigenous rangers, also play a crucial role in protecting and taking care of Country. They help to take care of Country by managing feral animals, weeds, and fire and keeping a Top Watch! across northern Australia for pests and signs of diseases.

In fact, we all have a role to play in Australia's biosecurity. Governments, farmers, travellers and members of the public – YOU.



Images: © Department of Agriculture, Fisheries and Forestry





Activity 1: worksheet 1c – sentences

# Pests, diseases and biosecurity

Using the pests, diseases and biosecurity fact sheet, fill in the blank spaces or answer the questions by recording responses in the spaces provided.



1. Biosecurity involves measures to prevent the \_\_\_\_\_ and \_\_\_\_\_ of pests and diseases into Australia.
2. Name the pest that smells awful and we DON'T want to enter Australia.  
\_\_\_\_\_
3. Indigenous rangers' knowledge of \_\_\_\_\_ enables them to keep a Top Watch! across northern Australia for pests and signs of diseases.
4. Who is in charge of biosecurity in Australia? \_\_\_\_\_
5. What is the name given to disease-causing organisms? \_\_\_\_\_
6. What are five key aspects safeguarded by having strict biosecurity measures in Australia?
  1. \_\_\_\_\_
  2. \_\_\_\_\_
  3. \_\_\_\_\_
  4. \_\_\_\_\_
  5. \_\_\_\_\_
7. Why should all people care about biosecurity?  
\_\_\_\_\_  
\_\_\_\_\_
8. What should be done if you have some food in your bag when flying to Australia after an overseas holiday?  
\_\_\_\_\_  
\_\_\_\_\_
9. We all have a \_\_\_\_\_ to play in protecting Australia's biosecurity, including government agencies, industry and members of the public.

🔗 Activity 2: worksheet 2a

# Farm manager

## Biosecurity action cards

Whether you own a large or small farm, you are responsible for keeping your property free from pests and diseases. Good biosecurity practices can help prevent pests and diseases on your farm and stop them from spreading to neighbouring properties.

You can secure your farm against pests, diseases and weeds by:

- monitoring animals or plant materials that enter the property, as well as sources of water, feed and fertiliser
- controlling feral animals, plant pests and weeds
- managing the movement of people, vehicles and equipment
- implementing good on-farm hygiene practices
- training staff and keeping accurate records of purchases, sales and movements

### Have a biosecurity plan in place

- If you own a farm, it is important to have a biosecurity plan in place to protect your property from the entry and spread of pests, diseases and weeds.
- Good biosecurity plans are important to protect your farm from pests and diseases.
- A biosecurity plan is a document (or range of documents) that outlines all of the biosecurity activities farm owners work through to reduce the risks of pest and disease entry or spread.

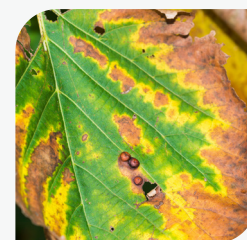
*(Adapted from Department of Agriculture, Fisheries and Forestry, 2023)*



Bananas are protected from Panama disease by plastic bags



Olive trees being cut down due to *Xylella fastidiosa*



Leaf 'scorched' from *Xylella fastidiosa*

### Scenario introduction

A harmful bacteria (that Australia is currently free from) is posing a serious threat to our farms. It can affect chickens, cattle and pigs and make them very sick. Australia has many biosecurity measures to help prevent the bacteria from entering our country.

**Your task is to help manage a farm and keep the animals safe by learning about biosecurity and following the actions on the cards to prepare yourself and your farm against this threat.**

**To be biosecurity-ready, complete the 8 cards in order by reading the information and performing the 'Action' statements. Record your answers on the template cards.**



#### Sample card: Introduction

Biosecurity refers to the measures and actions taken to protect people, animals and plants from harmful pests and diseases.

**Action:** *Prepare yourself and your farm management checklist. Record two ways you will prepare for the disease. Tick the introduction box and answer the question on the template card.*

#### Sample template card 1: Introduction

Record two ways you will prepare your farm for the threat of a bacterial disease.

*Sample answers*

- Giving all the animals vaccinations.
- Cleaning/sterilising all the equipment that is used on the animals.



## Biosecurity action cards

Cut out the 8 action cards and share them with your group. Read the information and then act on the statements in the correct order to prepare yourself and your farm for a biosecurity threat.

### Card 1: Biosecurity training



All farm managers must understand biosecurity. You need to attend a training session to learn about harmful bacteria and the meaning of biosecurity.

**Action:** *Tick the 'attending the biosecurity training' box and complete the question on the template card.*

### Card 2: Check fencing and borders



Strong fences keep some types of sick animals from wandering onto farms. Check that all the fences and borders on your farm are secure and fix any gaps.

**Action:** *Tick the 'checking fencing and borders' box and complete the question on the template card.*

### Card 3: Animal health records



Make sure all health records for the chickens, cattle and pigs are up to date. Include the number of animals, breeds, ages, vaccinations, etc.

**Action:** *Pretend to update a health record book, tick the 'animal health records' box and complete the question on the template card.*

### Card 4: Quarantine area setup



How would you set up a quarantine area in case any animals start to show signs of sickness? Think about the possibility of separating your healthy animals.

**Action:** *Record how long you think animals arriving from overseas have to stay in quarantine before being able to come into Australia. Tick the 'quarantine setup' box and complete the question on the template card.*

### Card 5: Learning to identify key symptoms



Early detection can prevent the spread of diseases on a farm. Learn how to spot the key symptoms of the disease.

**Action:** *Talk about why it might be more difficult for farmers on larger farms to spot symptoms, such as coughing or lumps in their animals, than those on smaller farms. Tick the 'learning symptoms' box and complete the question on the template card.*

### Card 6: Collaboration with an expert



It is time to consult with a biosecurity expert to make sure your farm's strategies are up to date with best practice biosecurity measures.

**Action:** *Prepare for the meeting by listing two questions you would ask about protecting your farm from the bacterial threat on the answer card and tick the 'collaboration with an expert' box.*

### Card 7: Emergency plan review



Prepared farms need an emergency plan in case an outbreak occurs.

**Action:** *Discuss what information an emergency plan would contain for a disease threat. Record two ideas on the card template and then tick the 'emergency plan' review box.*

### Card 8: Collaborating with others



Biosecurity is not just a concern of a single farm—the community needs to work together to improve everyone's understanding and share plans.

**Action:** *Host a meeting with other people to discuss what each farm is doing to protect its animals. Record one point another person talked about on the template card and tick the 'collaborating with others' box.*


🕒 Activity 2: worksheet 2b

# Farm manager

## Biosecurity template cards


Fill in the information for each action card to create a farm management biosecurity action plan. Tick each circle as you complete the action card and question.

**Template card 1: Biosecurity training**




Write down the meaning of 'biosecurity'.

**Template card 2: Check fencing and borders**




List two pest animals that might still be able to get over your fences and bring the bacteria onto the farm.

**Template card 3: Animal health records**




Research and record (approximately) how many cattle, sheep and pigs live in Australia.

**Template card 4: Quarantine area setup**




Research how long animals arriving from overseas have to stay in quarantine before being able to come into Australia.

**Template card 5: Learning to identify key symptoms**




Why might it be more difficult for farmers on larger farms to spot symptoms in their animals than those on smaller farms?

**Template card 6: Collaboration with an expert**




List two questions you would ask an expert about protecting your farm from the bacterial threat.

**Template card 7: Emergency plan review**



Record two things an emergency plan for a bacterial outbreak would contain.

**Template card 8: Collaborating with others**



Record one idea another person shared with you about managing or preparing their farm for a biosecurity threat.

🔗 Activity 2: worksheet 2c

## Farm manager

### Biosecurity bookmarks

Using the information from Activity 1 and 2, create three bookmarks that educate people about Australian biosecurity.

Record your information. Cut out each bookmark and laminate when completed.

**Australian  
biosecurity**



**Australian  
biosecurity**



**Australian  
biosecurity**



Images: © Department of Agriculture, Fisheries and Forestry

## Activity 3: worksheet 3a Biosecurity challenge

### Calling all biosecurity champions across Australia!

Prepare yourselves for the biosecurity challenge, an extraordinary quest in which you'll play detectives, scientists and guardians of our nation. This exciting competition is designed to demonstrate your problem-solving skills and commitment to protecting our precious environment.

As Australian biosecurity experts, you'll join forces in a mission to defend Australia from unseen threats. These threats loom especially large during international gatherings (like the Olympic Games and World Cup events), which can inadvertently introduce harmful stowaways that jeopardise our plants, animals and ecosystems.

Should you choose to accept this mission, you'll collaborate to solve pressing biosecurity challenges. Each successful solution earns your team a coveted colour paw stamp from Frankie the biosecurity detector dog, symbolising your progress and prowess. Strive to complete all five challenges to rise as the ultimate biosecurity champions.



### Let the biosecurity challenge begin!



**Event 1** Rapid response multiple choice quiz

Quick-fire questions will kickstart your adventure, challenging your knowledge and speed.



**Event 2** Teamwork trek

Work together to navigate through complex problems that test both your teamwork and biosecurity understanding.



**Event 3** True or false trivia

Sharpen your accuracy with rapid true or false decisions that require keen judgement.



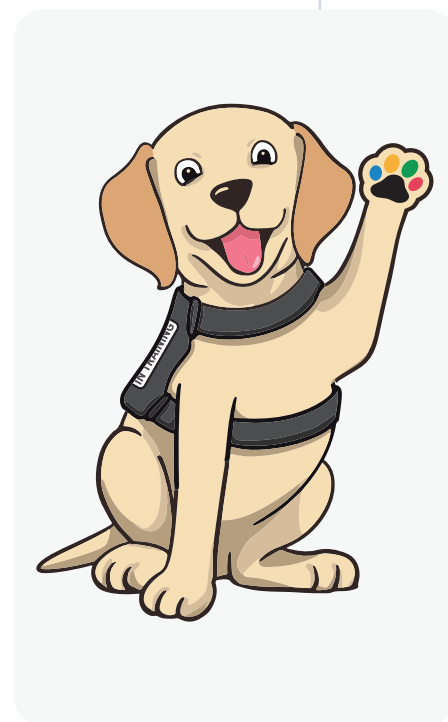
**Event 4** Problem-solving puzzle

Engage in a series of diverse challenges that demand strategic thinking and effective communication.



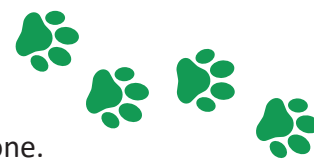
**Event 5** Research raid

Uncover essential information to improve our defences.



## Event 1: Rapid response multiple choice quiz

In your groups, answer the questions. Tick the circles as you complete each one.



**Question 1: What is a common method to prevent invasive plants and animals from entering Australia?**

- a) Mandatory inspections for all incoming passengers.
- b) Inspection of mail, luggage and cargo at airports and ports that arrive from overseas.
- c) A complete ban on all international travel and mail, luggage and cargo.
- d) Seasonal closing of borders to certain countries.

**Question 2: How are diseases prevented from spreading to Australian livestock from other countries?**

- a) By treating all livestock with medicines regularly.
- b) Through pre-arrival health screenings and quarantine for imported animals.
- c) Vaccinating every animal in Australia against all known diseases.
- d) Only allowing native Australian animals to be farmed.

**Question 3: Which biosecurity measure helps to detect and manage pests at Australian borders?**

- a) Using robotic detection at all entry points to Australia.
- b) Using biosecurity detector dogs trained to detect specific biosecurity risks.
- c) Making it mandatory to have a two-week isolation time for all visitors to Australia.
- d) Installing ultraviolet scanners to sterilise all incoming products.

**Question 4: What is the definition of a pest?**

- a) An unwanted organism that causes problems for plants, animals or people, such as insects, rodents or weeds that harm our pets, food and clothing materials.
- b) An unwanted insect that helps in pollination and controlling harmful bugs.
- c) A type of plant used in medicine and food preparation for health benefits.
- d) An unwanted organism that causes problems to only plants and can harm our pets, food and clothing materials.



**Don't forget to stamp your green paw print and keep competing until your group has all five!**





## Event 2: Teamwork trek



In your groups, answer the questions. Tick the circles as you complete each one.

**Obstacle 1:**

Picture international guests arriving who unknowingly carry tiny insect pests in their luggage, threatening Australia's agriculture.

**List three ways these pests could affect our food supply.**

---

**Obstacle 2:**

Imagine that the event has just started, and a beautiful but unknown plant used for decoration starts spreading uncontrollably.

**What two things could happen if this plant outcompetes Australia's native plants?**

---

**Obstacle 3:**

Suppose a foreign animal disease threatens to enter Australia just before the event, putting our livestock at risk.

**What three steps could we take to protect Australia and prevent an outbreak?**

---

**Obstacle 4:**

Consider the increased number of international guests entering Australia during the time of international events.

**Create a slogan such as: *'Play Safe, Stay Safe: Protect Our Australian Home!'* that encourages crowds to protect Australia's animals, people and environment when visiting.**



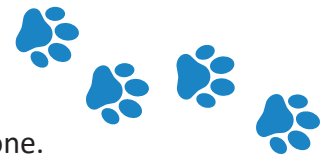
**Don't forget to stamp your black paw print and keep competing until your group has all five!**







### Event 3: True or false trivia



In your groups, answer the questions. Tick the circles as you complete each one.

**Question 1:**

A mosquito-borne virus once threatened a global sports event, leading to the need for precautionary measures.

**True or false?**

---

**Question 2:**

Biosecurity detector dogs can help detect hidden pests and diseases. They are an important biosecurity strategy used in Australia and, therefore, very important during international events.

**True or false?**

---

**Question 3:**

When Australia hosts an international sporting event, all international athletes' luggage must undergo a quarantine period to prevent the spread of pests and diseases.

**True or false?**

---

**Question 4:**

At every international event, a special team of biosecurity agents use laser technology to scan all plants and animals entering the country to prevent the spread of invasive species.

**True or false?**



**Don't forget to stamp your blue paw print and keep competing until your group has all five!**



## Event 4: Problem-solving puzzle



In your groups, answer the questions. Tick the circles as you complete each one.

**Problem 1:**

You're returning to Australia from your first international holiday and are unsure if you can bring back a gift for your friend.

**What are three things you should do in this situation and three things you should not do?**

---

**Problem 2:**

A farm near an international event venue reports a sudden outbreak of animal disease.

**What two things could Australians do to help protect other animals and prevent the spread of the disease?**

---

**Problem 3:**

Fishermen report spotting an unfamiliar marine species near an international water sports area.

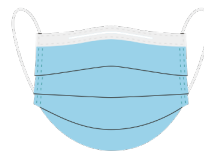
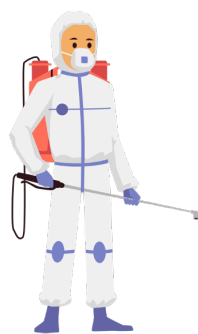
**What two measures can be taken to ensure these species do not harm the local marine life?**

---

**Problem 4:**

An international event venue is facing challenges with waste management, leading to unsanitary conditions.

**Select two items from below and explain how they could be used to address this issue.**



**Don't forget to stamp your yellow paw print and keep competing until your group has all five!**





## Event 5: Research raid

In your groups, answer the questions. Tick the circles as you complete each one.



**Task 1:**

Australian biosecurity is especially important when hosting large international events, like the Olympic Games. Research the origin of the design of the five Olympic rings.

**Find out who designed them, the date they were designed and what they represent.**

---

**Task 2:**

Identify a pest or invasive plant species that has been introduced to Australia or threatens invasion from overseas.

What is its name, and what effect does/would it have on local ecosystems or agriculture?

**Use the plant pests and diseases link for ideas.**

[www.agriculture.gov.au/biosecurity-trade/pests-diseases-weeds/plant](http://www.agriculture.gov.au/biosecurity-trade/pests-diseases-weeds/plant)

---

**Task 3:**

Research the brown marmorated stink bug and create a scaled model of the organism.

**Use the brown marmorated stink bug link for help.**

[www.agriculture.gov.au/biosecurity-trade/pests-diseases-weeds/plant/brown-marmorated-stink-bug](http://www.agriculture.gov.au/biosecurity-trade/pests-diseases-weeds/plant/brown-marmorated-stink-bug)

---

**Task 4:**

Identify a pathogen (virus, bacteria, fungus) that has spread to Australia as a result of global travel that affects humans.

**What is its name, and what effects does it have on human health?**

---



**Don't forget to stamp your red paw print and keep competing until your group has all five!**





🔗 Activity 3: worksheet 3b

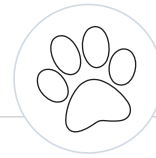
# Biosecurity challenge answer sheet



## Event 1: Rapid response multiple choice quiz

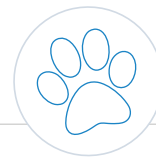
- Question 1: \_\_\_\_\_
- Question 2: \_\_\_\_\_
- Question 3: \_\_\_\_\_
- Question 4: \_\_\_\_\_

## Event 2: Teamwork trek



- Obstacle 1: \_\_\_\_\_  
\_\_\_\_\_
- Obstacle 2: \_\_\_\_\_  
\_\_\_\_\_
- Obstacle 3: \_\_\_\_\_  
\_\_\_\_\_
- Obstacle 4: \_\_\_\_\_  
\_\_\_\_\_

## Event 3: True or false trivia



- Question 1: \_\_\_\_\_
- Question 2: \_\_\_\_\_
- Question 3: \_\_\_\_\_
- Question 4: \_\_\_\_\_



### Event 4: Problem-solving puzzle

Problem 1: \_\_\_\_\_  
\_\_\_\_\_

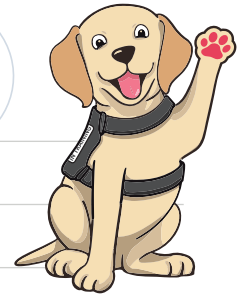
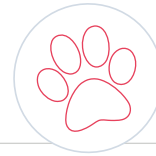
Problem 2: \_\_\_\_\_  
\_\_\_\_\_

Problem 3: \_\_\_\_\_  
\_\_\_\_\_

Problem 4: \_\_\_\_\_  
\_\_\_\_\_

### Event 5: Research raid

Task 1: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_



Task 2: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Task 3: Paste your model or a picture of your model in this space.

Task 4: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_



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#### Acknowledgement of Country

We acknowledge the Traditional Custodians of Australia and their continuing connection to land and sea, waters, environment and community. We pay our respects to the Traditional Custodians of the lands we live and work on, their culture, and their Elders past and present.



Australian Government  
Department of Agriculture,  
Fisheries and Forestry

