Why is that Farm Here?

Year 4 – Humanities and Social Sciences
Year 5 – Humanities and Social Sciences
Year 6 – Humanities and Social Sciences

(HASS; Yr 4 ACHASSI079)
Draw simple conclusions based on analysis of information and data

(HASS; Yr 4, ACHASSI073)
Pose questions to investigate people, events, places and issues

(HASS; Yr 4, ACHASSI074)
Locate and collect information and data from different sources, including observations

(HASS; Yr 5, ACHASSK113)
The environmental and human influences on the location and characteristics of a place and the management of spaces within them

(HASS; Yr 5, ACHASSI095)
Locate and collect relevant information and data from primary sources and secondary sources

(HASS; Yr 6, ACHASSI123)
Locate and collect relevant information and data from primary sources and secondary sources

(HASS; Yr 6, ACHASSI124)
Organise and represent data in a range of formats including tables, graphs and large- and small-scale maps, using discipline-appropriate conventions

Cross-curriculum priority

Sustainability

Hort Innovation Strategic levy investment | VEGETABLE FUND

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Why is that Farm Here?

The relationships between climate and crops

In this activity, students use the basic rainfall and temperature metrics to assess how suitable their state or territory is for growing certain crops. Some first-hand experience collecting and interpreting data will help students understand why certain plants grow better in some areas.

Equipment:

Access to the internet for Bureau of Meteorology (BoM) climate data and maps

Some maps could be printed for project use

Duration:

45 minutes, plus time in a second session for project work if needed.

Location:

The classroom

Notes:

What does the data tell us about the climate?

Watch **The One with the Tractor**

- Explore the data on the BoM's website under climate: http://www.bom.gov.au/climate/averages/maps.shtml
- Ask students to locate the school's town or area on these maps and find the data for:

◇ Rainfall (mean rainfall)
◇ Temperature (average max, min and mean temperature)

- Show students what the buttons above the rainfall map do. (They filter data and enable students to look at data for the whole country or for their state or territory.)

? **Discuss:** why people might want to know how much it rains in their state or territory. Make a list of reasons on the board.

- What about other parts of Australia – can students think of reasons why people would want to check rainfall levels across the whole country? Some prompts might include: transport – tourism; transport and shipping via aviation, road transport, rail and ocean; sporting events; outdoor events such as festivals; fire risk; agricultural trends. Add to the list with reasons for using national rainfall data.
- Draw students' attention to the drop-down menu (above the map) that shows annual, monthly or seasonal rainfall averages. Discuss what these words mean.

Discuss:

? Why would someone want to know the average rainfall for April–November?

? What season/s does this cover?

? What do people do in these seasons in different areas?

? What happens on farms?

? Can anyone name any vegetables or fruits that people grow and harvest in these months in your area?

- Explore: people in many industries use rainfall and other data to help them predict conditions for future projects. Examples include science fieldwork, engineering, wilderness activities, emergency services, road and rail maintenance, aviation, shipping, agriculture, forestry, animal husbandry, entertainment, tourism, gardening, outdoor education and outdoor events.
- Using BOTH the temperature and rainfall data maps for your state or territory, students decide where and when they would like to host one of the following events:

◇ An evening outdoor music festival.
◇ A 'world's biggest family picnic'.
◇ A school sports day.

Prompt them to consider:

? Would it be better for this event if it were wet or dry? Why?

? Are there people who would get too hot or too cold? Who?

? What is the best temperature and weather for this event?

? Are there any other considerations we'd like to raise?

Locating Farms

- Using the BoM data, students work in groups to decide where to place farms that will be growing specific crops.
- Before they start, look at a map of your state or territory that shows the roads, major cities and towns, ports, waterways and rain lines.
- Ask if it matters whether or not a farm is near these features. Why might it be an advantage for a farm to be near transport links?

Using the data in the Crop Considerations table (below) as well as the BoM's mean (average) rainfall and average temperature maps, ask students to consider:

- Can we grow this crop in our state? (Yes/no.) Why or why not?
- If yes, where would be an ideal location? Why?
- In this location, are there specific months in which we can grow this crop? Which ones, and why?
- In this location, are there months when we cannot grow this crop? Which ones, and why?
- What factors other than temperature and rainfall did we consider?
- Are there additional factors we should assess before placing our farm here?

Crop Considerations

	top temp	bottom temp	harvest seasons
Apples	30˚C	-10˚C *	autumn, winter
Broccoli	30˚C	-4˚C	all year
Capsicum	45˚C	0˚C	summer, autumn
Cassava	45˚C	0˚C	spring, summer
Mangoes	45˚C	0˚C	summer
Garlic	30˚C	-10˚C	spring, summer
Soybeans	35˚C	-4˚C	summer, autumn
Taro	35˚C	0˚C	autumn
Sweet potato	35˚C	0˚C	summer, autumn
Wasabi	20˚C	-15˚C	autumn, winter
Water chestnut	30˚C	0˚C *	autumn, winter

* Some of these plants are perennial, meaning they come back every year. When dormant (asleep), these plants may tolerate temperatures cooler than those shown here.

Presenting plans

- Students may produce a map of the area showing the zone in which they would ideally build their farm. They list what they could grow and what considerations they made based on their understanding of rainfall and temperature.
- For example, students may discuss the techniques farmers use in Australia to minimise the impact of rainfall and temperature in their area. These could include: growing frost-tender plants in polytunnels and greenhouses; or irrigating soil in warm, dry districts.
- If your area is known for a certain type of agriculture, such as asparagus, rice, sweet potato or bananas, an extension project could explore how this came to be. Did this industry grow up around the skills of a particular group or culture, or a changing food trend (e.g. growth in markets for bananas and wine grapes since about 1970)?

Primary Sources and Secondary Sources

Bureau of Meteorology data is a secondary data source. This means the data was collected, sorted, grouped and aggregated (put together) by someone else (in this case, onto a map). Secondary sources are best when they come from organisations/ people with reliable data – eg industry experts, government organisations and similar.

Weather data points taken individually are primary data sources. If students set up their own rainfall and temperature data collection point as a part of this lesson, they are collecting primary source data.

A primary source is the 'first' account – it is statistical data, direct observations, eyewitness accounts, video and audio recordings, the direct words of a person in documents like letters and legal documents. A secondary source adds an analysis and evaluation of the topic.

Resource:

Ithaca University Library – Primary sources and Secondary sources: https://library.ithaca.edu/sp/subjects/primary

Primary data

- Students undertake to research, acquire and install a rain gauge and thermometer to collect primary source data about the weather in the school grounds.
- Before they start, they need to consider the limitations on where they can put a rain gauge and a thermometer, such as:

◇ A rain gauge must be in the open, above ground level.
◇ A thermometer should be in shade.
◇ A thermometer must allow for air-flow over the thermometer bulb.
◇ A thermometer must be 1.2m above ground level.
◇ A thermometer must be above natural surfaces (grass, sand, earth), not build surfaces such as concrete.
◇ Will the instruments be safe from accidental and wilful damage?
◇ Will they be accessible to read?
◇ Will they be affected by nearby structures?
◇ Guidance can be found on the Bureau of Meteorology website: http://www.bom.gov.au/climate/cdo/about/airtemp-measure.shtml