

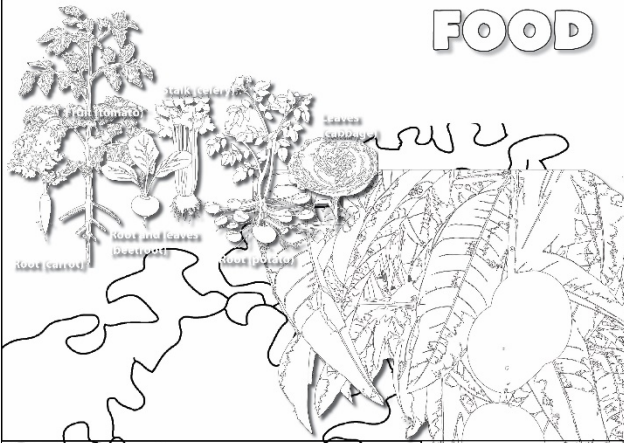


GROWING LITERACY

STEM Garden learning for Stage 3

Name: _____

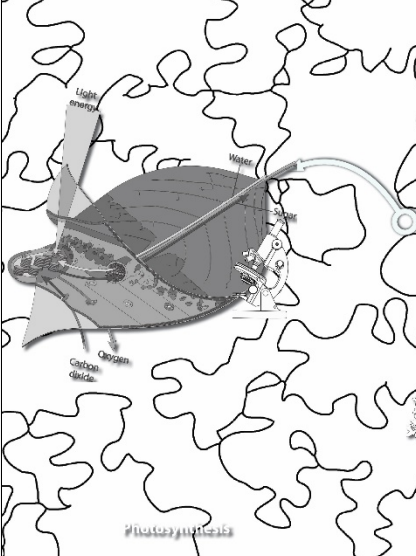
FOOD



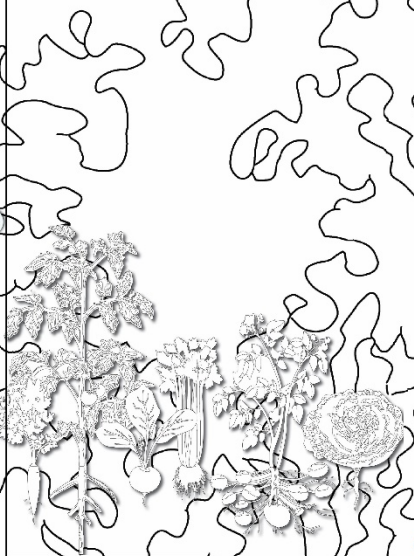
TEMPERATURE



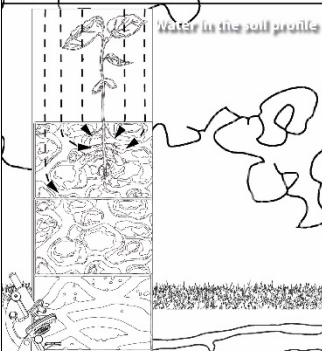
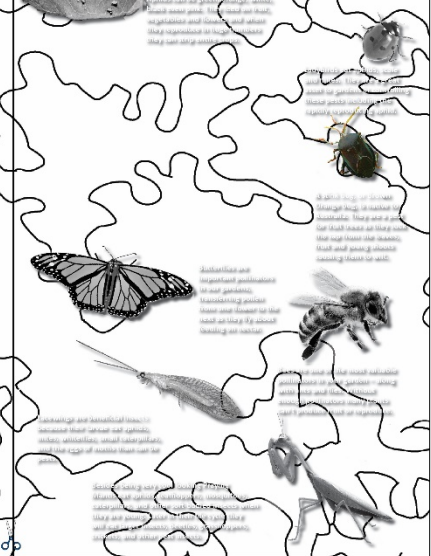
SUNLIGHT



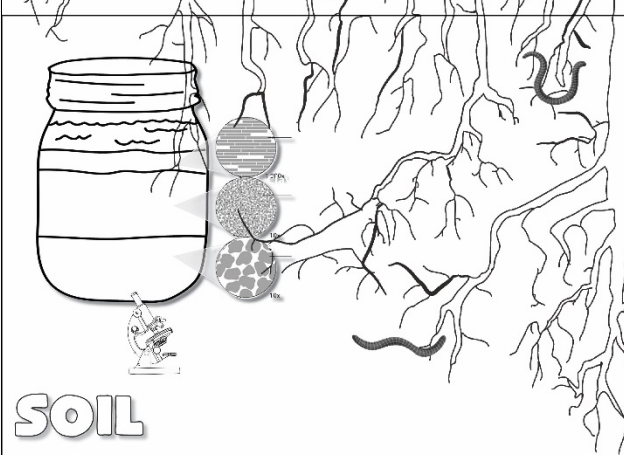
PLANTS



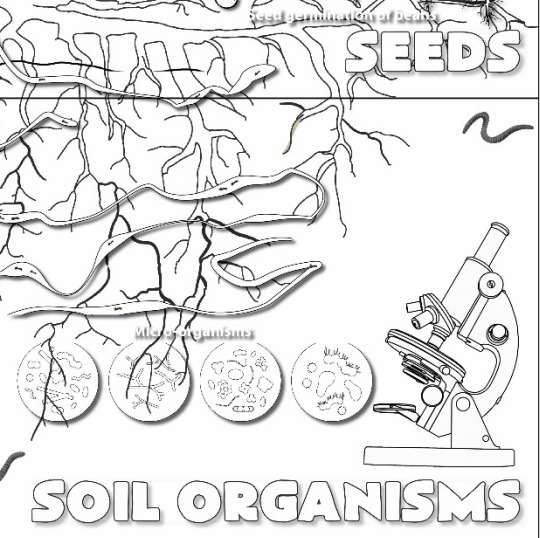
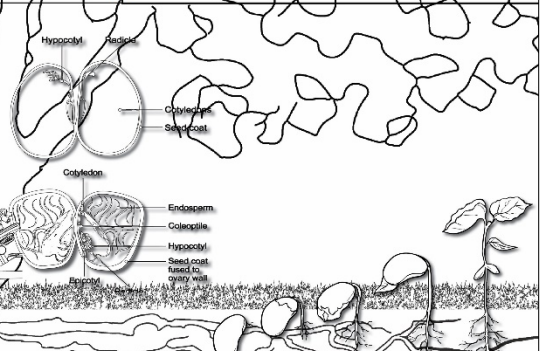
INSECTS



WATER



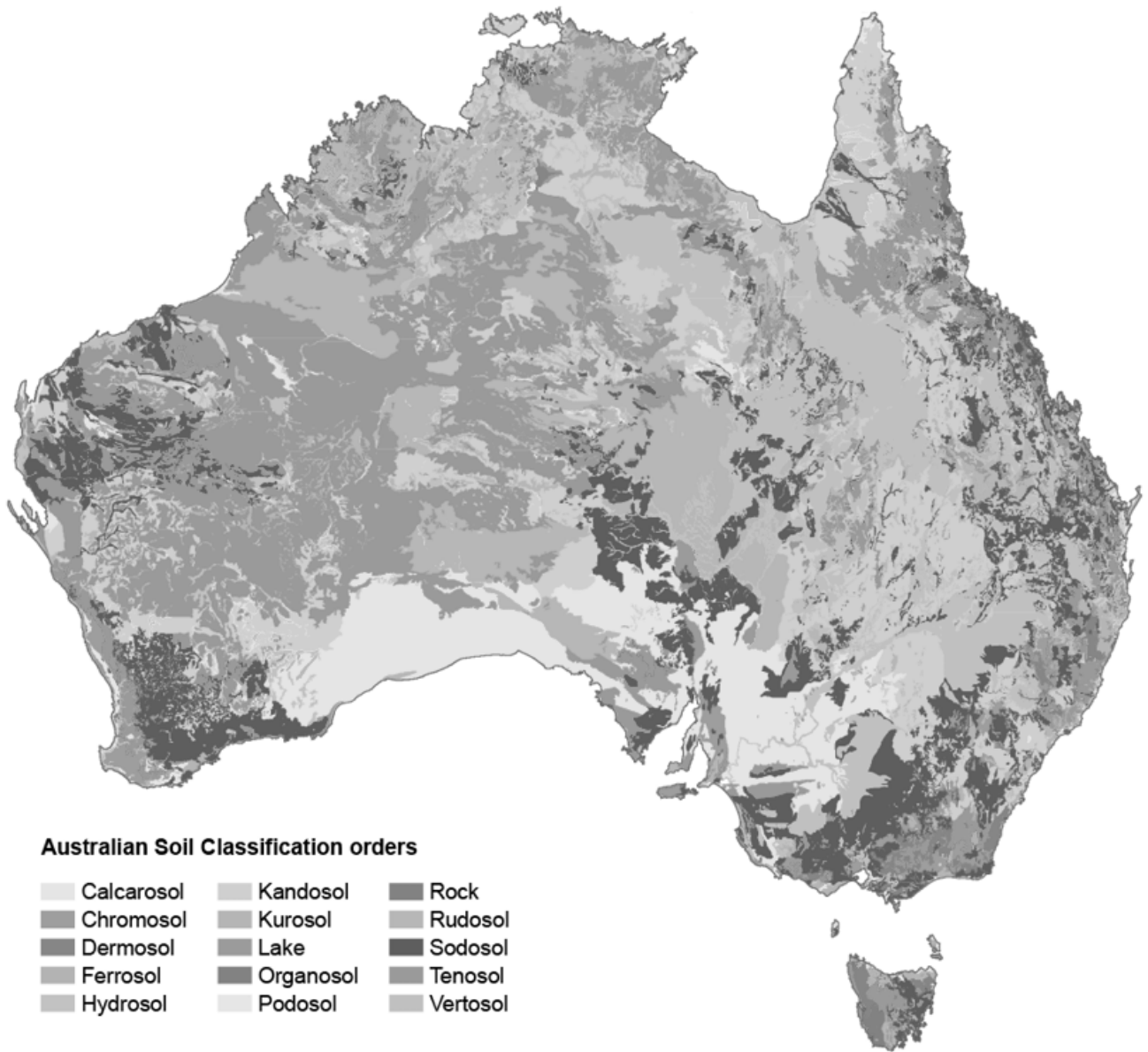
SOIL



SOIL ORGANISMS

LIVING SOILS

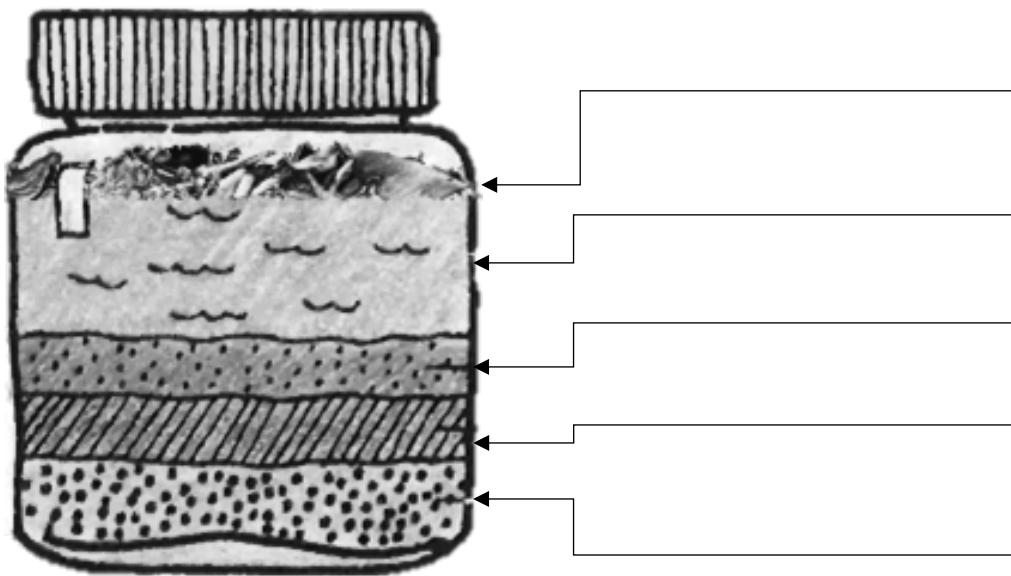
This map shows how many different soils are found around Australia.



Soils are influenced by the geology of the area, the landforms and the climate.

The combination of geology, organic matter and soil organisms has a big impact on the fertility of the soil. A jar test can show you about these components of your soil. They can help farmers and gardeners judge the quality of their soil and what can be done to make the soil healthier.

This diagram is an example of a jar test. Label the components



State whether these components of soil are from a living or a non-living source.

sand –

water –

clay –

organic matter –

silt –

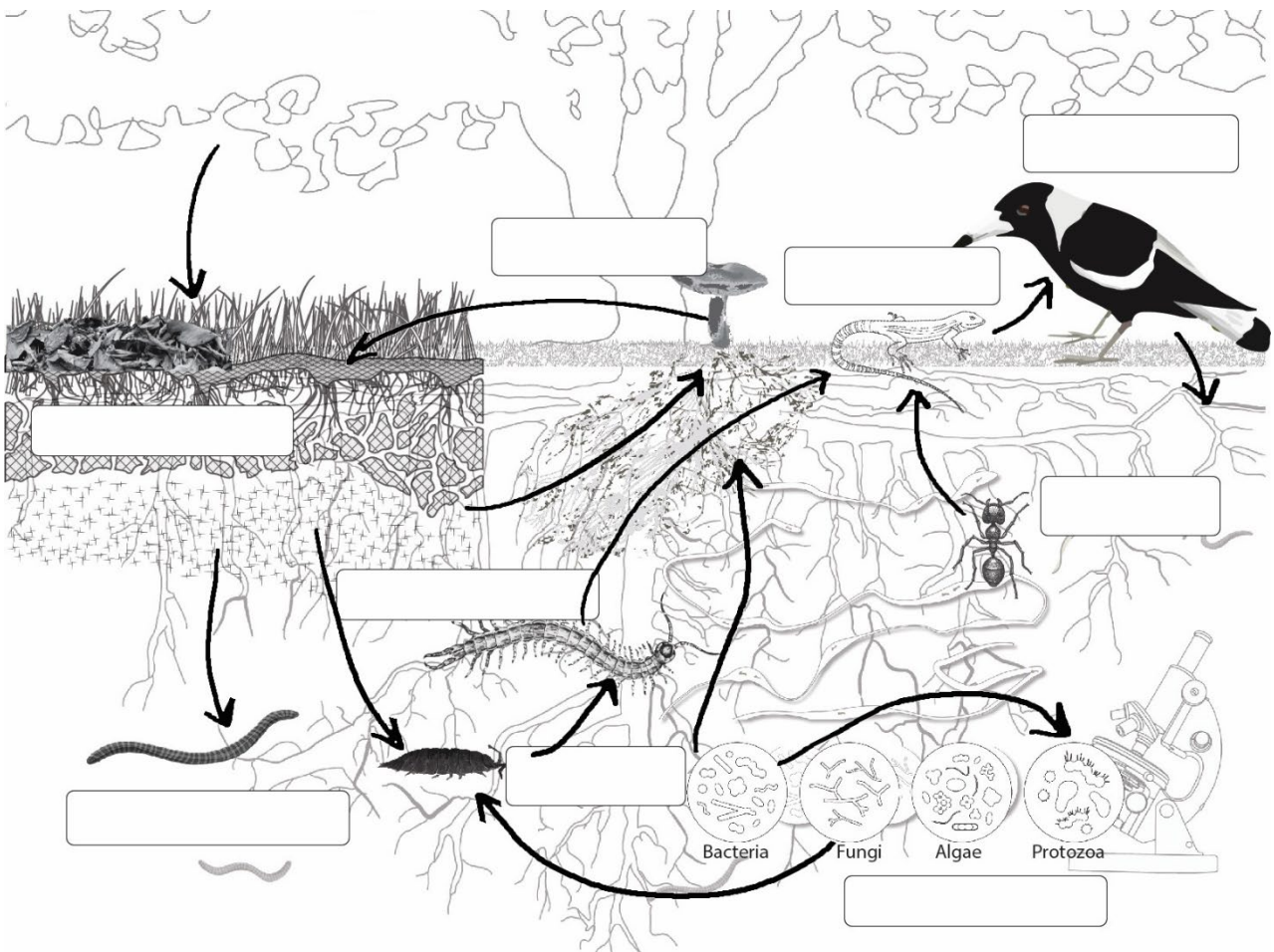
WHO LIVES IN THE SOIL?

Larger animals that live in soil, including ants and worms, help aerate the soil. Most plants need air around their roots to survive. Aeration and channels left by animal movement allows water to move through the soil and help ensure water is available at depth and across the landscape.

Plants and animals also make nutrients available to plants by consuming organic matter. In this way plants and animals make the nutrients stored in organic matter available to plants. Nutrients are vital to plant survival and their ability to produce fruit.

The plants and animals that perform this role include ants and worms but also bacteria, fungi, microscopic organisms like nematodes and protozoa and bugs.

Label this illustration of a soil food web.



The arrows in a food web show who is eaten by whom, they start from the animal being eaten and point to the animal that eats them.

Why do you think it is important for farmers to ensure their soil organisms are healthy?

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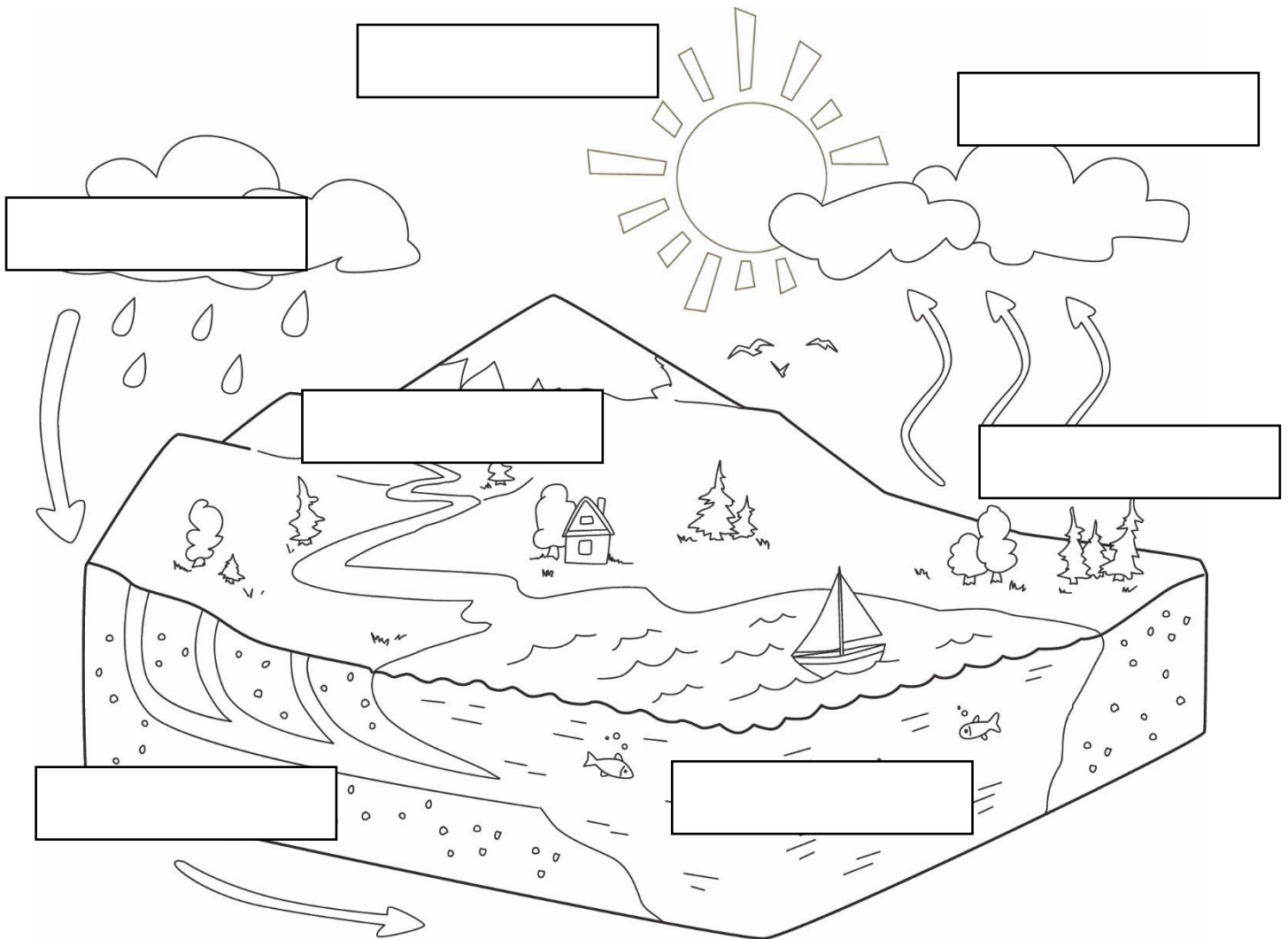
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WATER FOR GROWING

There is a limited amount of water in the world, we don't lose it and we can't make any more! The water cycle demonstrates how this works in the world.

Label this diagram of the water cycle.



You will need to include:

evaporation – rainfall (precipitation) – groundwater – river – lake – cloud
– sun

You can observe water being used by plants by placing a cover over a plant and observing the water that accumulates in the cover.

Write a report of the water cycle experiment, include a diagram of the setup and make sure you include:

- an introduction stating what the aim of the experiment was
- a method stating how the experiment was set-up
- a discussion stating what you observed.
- a conclusion stating how this applies to growing plants.

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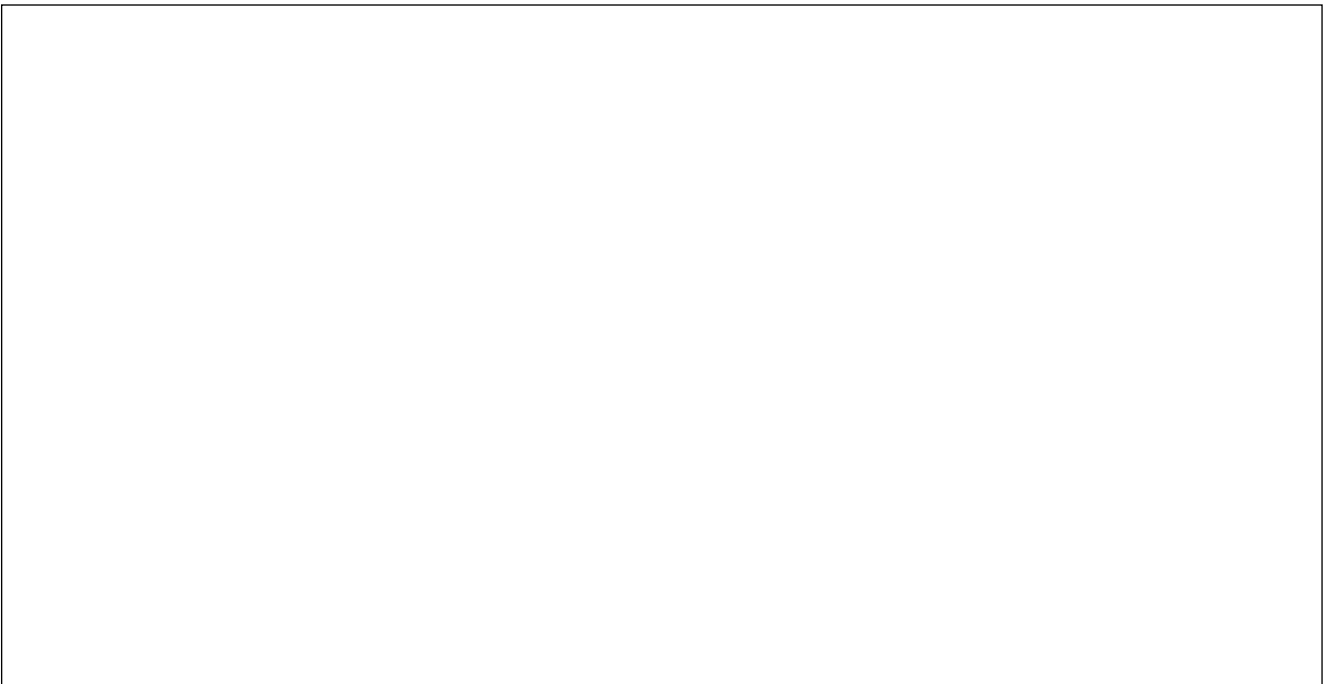
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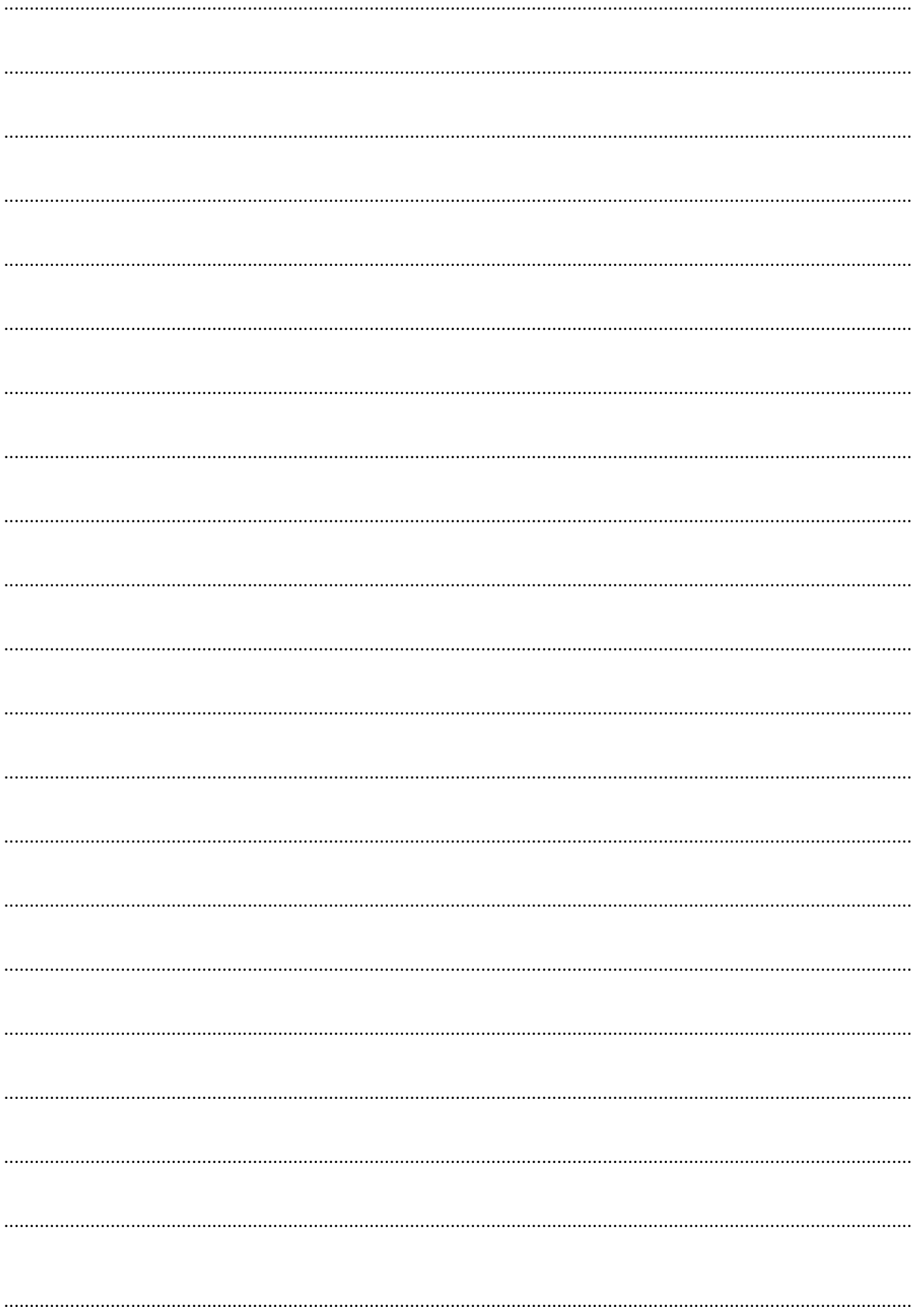
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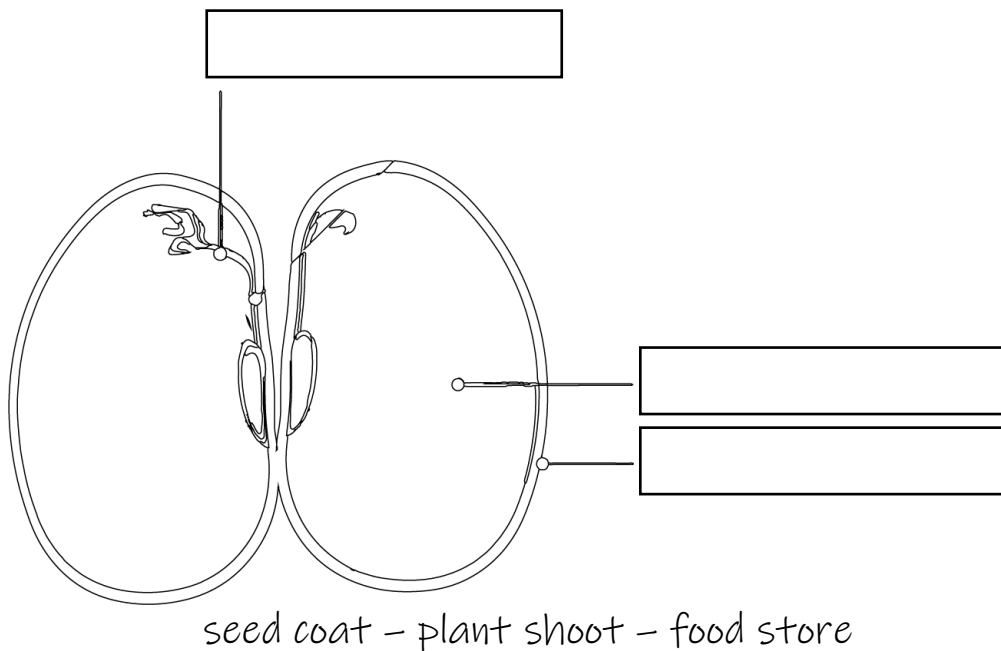




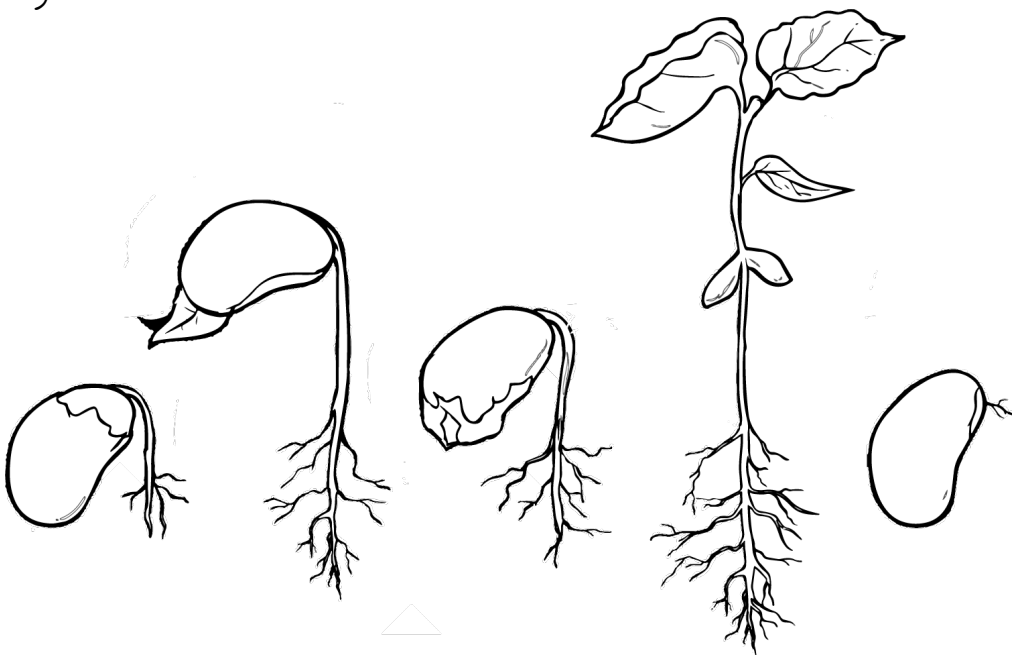
SEEDS

Seeds will germinate under the right conditions. The ideal conditions for germination depend on what type of seed it is but generally they need the right temperature, the right amount of water and oxygen ... and for continued growth they need healthy soil.

Label the parts of this diagram of a seed.
Where do you think the plant emerges from?



Number the following images to show the sequence of seed germination to plant growth.

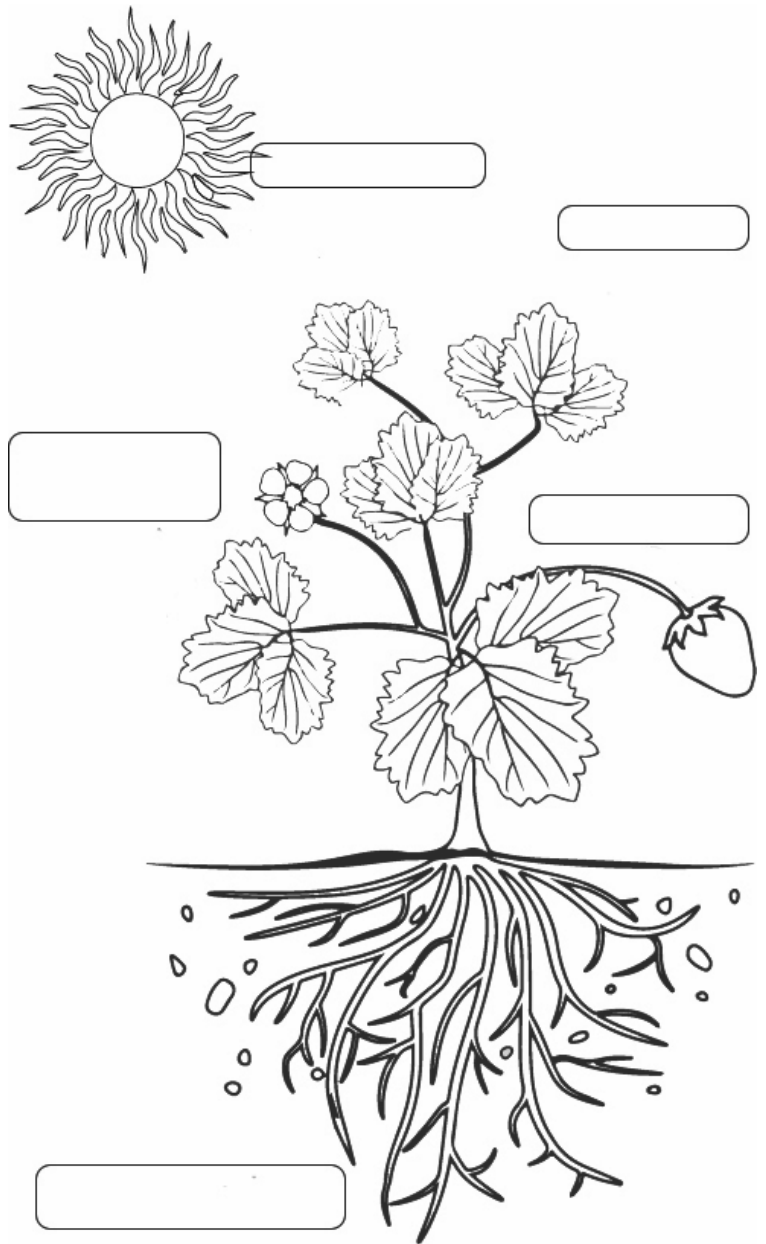


SUNLIGHT

Add arrows and labels to this diagram to show how a plant uses sunlight to make energy.

Include labels for:

- Sunlight
- Water
- Energy / sugar
- Carbon dioxide
- Oxygen
- Minerals



write the word equation that describes photosynthesis here:

.....

Why do plants need sunlight?

.....

.....

Why is it important to us?

.....

.....

PLANTS

How do the following factors affect which plants a farmer might plant in different seasons?

Time to harvest

Sowing depth

Preferred soil types

Equipment available

Harvest procedure

Who is going to eat it

How much people pay for it in the supermarket

Weather and climate requirements of the plant

Planting depth

Equipment available

INSECTS

Complete a survey of your garden.

To be comprehensive a survey will need to be completed at different times of the day and ensuring that you observe different parts of the plant ie check under leaves, and along the stem as well as on flowers and leaves. Some insects will work mostly along the surface of the soil so check there as well.

Are there plenty of beneficial insects present? Research ways to encourage beneficial insects and make a plan for your garden.

The observation template on the next page can be used to record your findings.

Observation template

Name: _____ Date: _____

Location name, features and description _____

Describe the area (ie plants, buildings, water nearby, shelter or shade etc) or draw a map

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Time of day _____ Weather _____

Type of insect	Number observed	What were they doing?

Observation record number _____ of _____

Next observation planned: _____

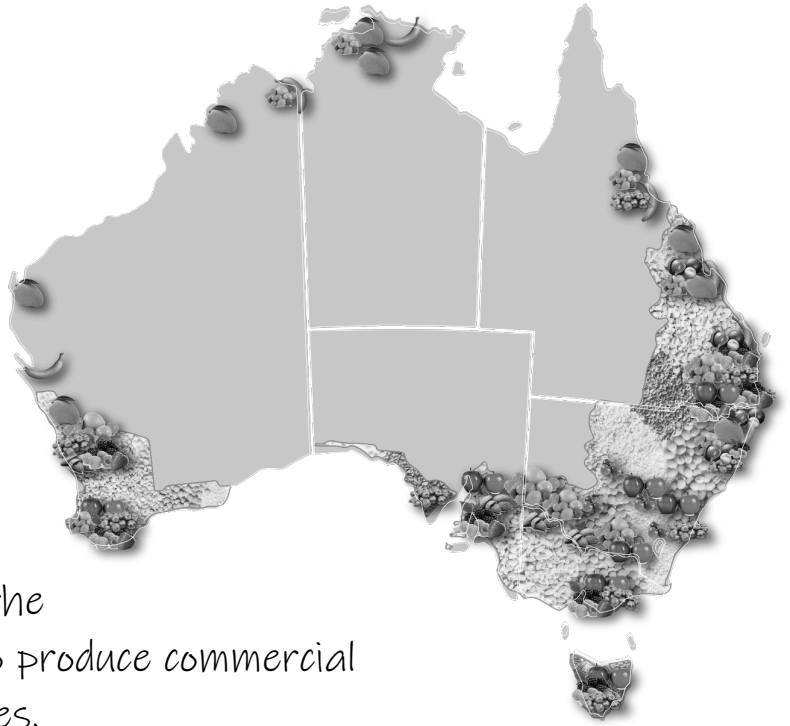
In agriculture the practice of encouraging beneficial species is part of integrated pest management (IPM). Find out more about IPM online from reliable Australian websites.

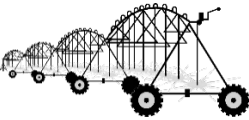
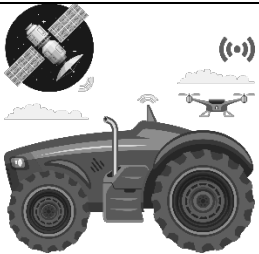
FOOD

This map shows the major food growing regions of Australia.

Even in these areas farmers sometimes need to compensate when natural conditions are not sufficient for plant growth.

Describe how the technology in the following images help farmers to produce commercial quantities of fruit and vegetables.



	Drones
	Greenhouses
	Irrigation
	Automated tractors
	Hydroponics

GROWING SEASONS

Research the planting time, time to maturity and best season for fruit for some common fruit and veges. Make a plan for planting at the right time of year so they will mature when it is their season.

Complete the calendar for those foods. Shade the planting month yellow, the growing season green and the harvest month blue.

Food	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Have you got something ready to harvest all year-round? If not add some more to fill the gaps in produce.



CONGRATULATIONS

.....
(Name)

on completing

AGPATCH: GROWING LITERACY

.....
(Date)

You have completed the first stage of
food and fibre explorer training!

