



EWwww!

There's a worm
in my mud pie!

BOOK BY
JO HATHWAY
NICKY PARKER

About this book

This book is one of a series of stories aimed at developing agricultural understanding in young students, as well as an appreciation of the work involved in producing food and fibre on Australian farms.

About Tocal

Tocal is a 2200 hectare farm located in the lower Hunter Valley of New South Wales, Australia. The property contains a range of natural ecosystems, from rainforest remnants and wetlands to dry sclerophyll forests. The main farm enterprises are beef cattle, dairying, horse breeding, honey, and free range egg production (Numeralla), with a small demonstration sheep flock and some cropping.

Tocal College, CB Alexander Campus is located on Tocal. The College provides a unique blend of agricultural training and practical experience for school leavers and other people interested in rewarding careers in agriculture as well as those wishing to upgrade their knowledge and skills.



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Australian Government

EWwww!

There's a worm
in my mud pie!

Muuuuuum!!!!

There's a worm in
my mud pie!

It's grosssssssss!



You found a worm?

That's a great sign
for the **soil**!

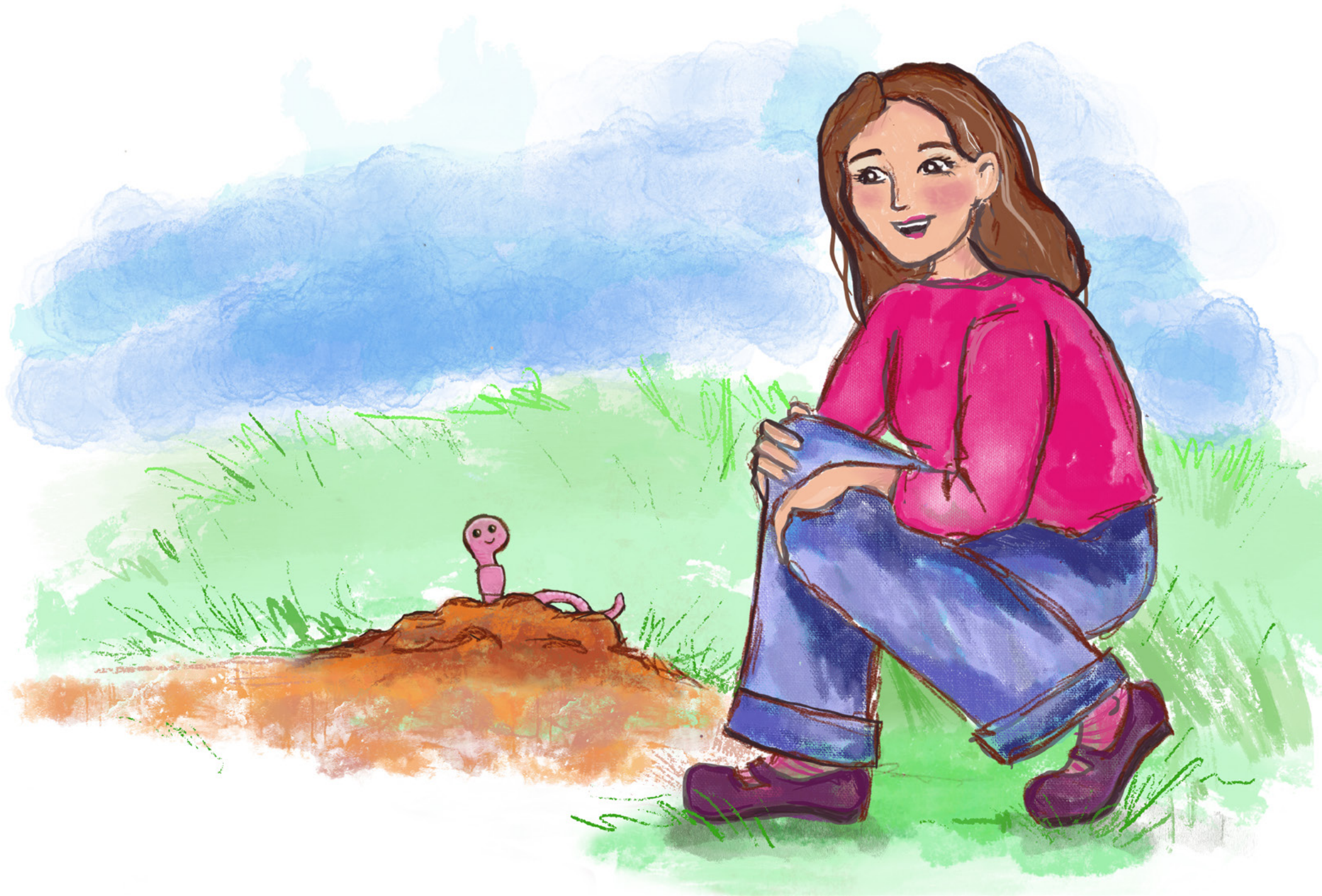




I don't care about the **dirt**,
I care about my mud pie,
and it's got a **worm** in it!

Well your mud pie must be
made of some nice healthy **soil** if
it has a **worm** in it.

And there are probably lots of other
little things living in the soil too!



See those **ants**?
They live in the soil.

And there are other **beetles**, **bugs** and
insects in soil.

As well as tiny little animals we can't
see without a microscope.

They are called **microorganisms**.



That's gross, who would
want to live in the **dirt**?

I will make them a
new home.



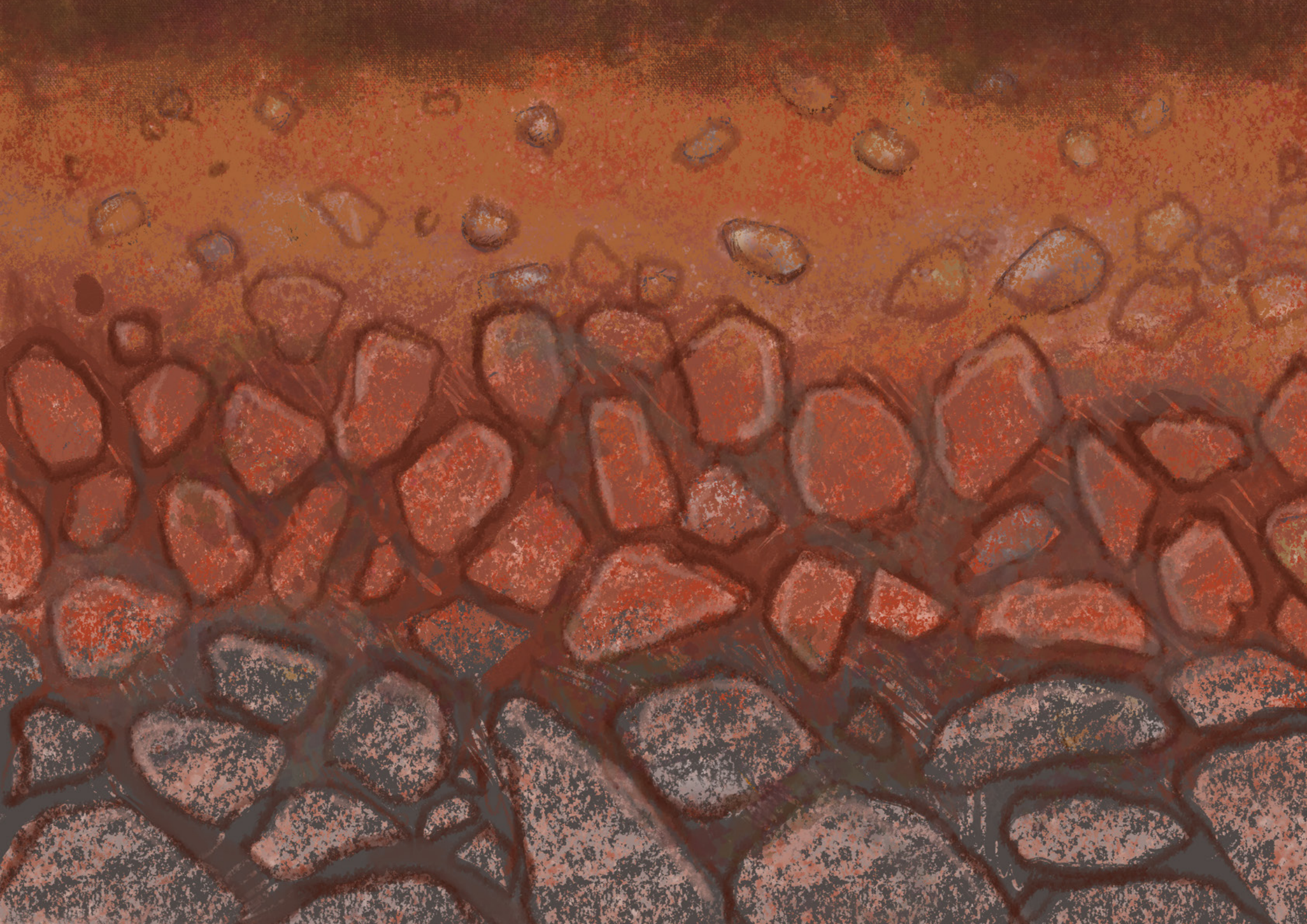
The **soil** is their home!

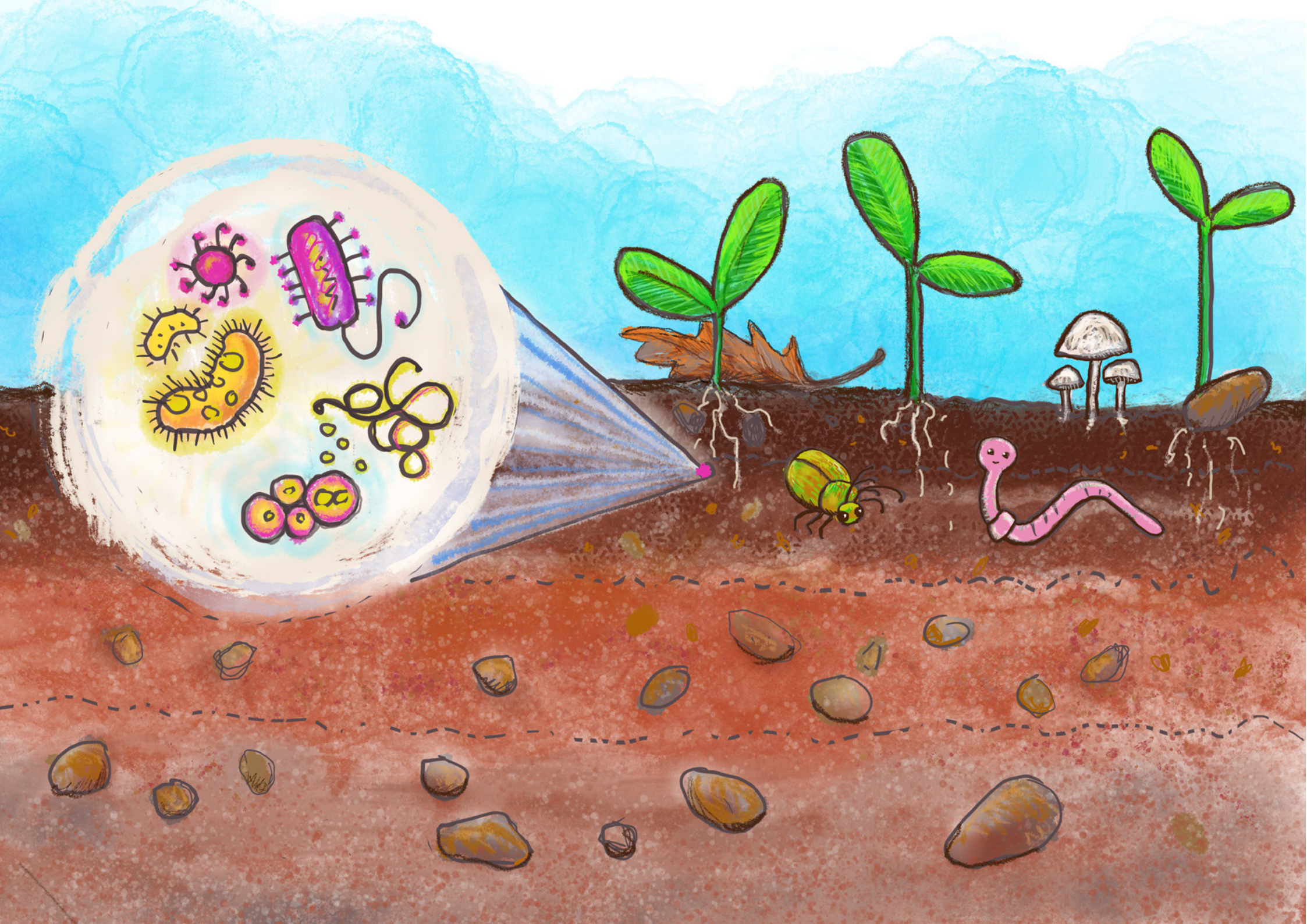
It's where they find the
things they need to survive;
food, water and shelter.
And they **help us** grow food.



The **dirt** is the parts of the **soil** that came from rocks millions and millions of years ago. It's the bit that makes your hands dirty. It's the clay, sand and silt.

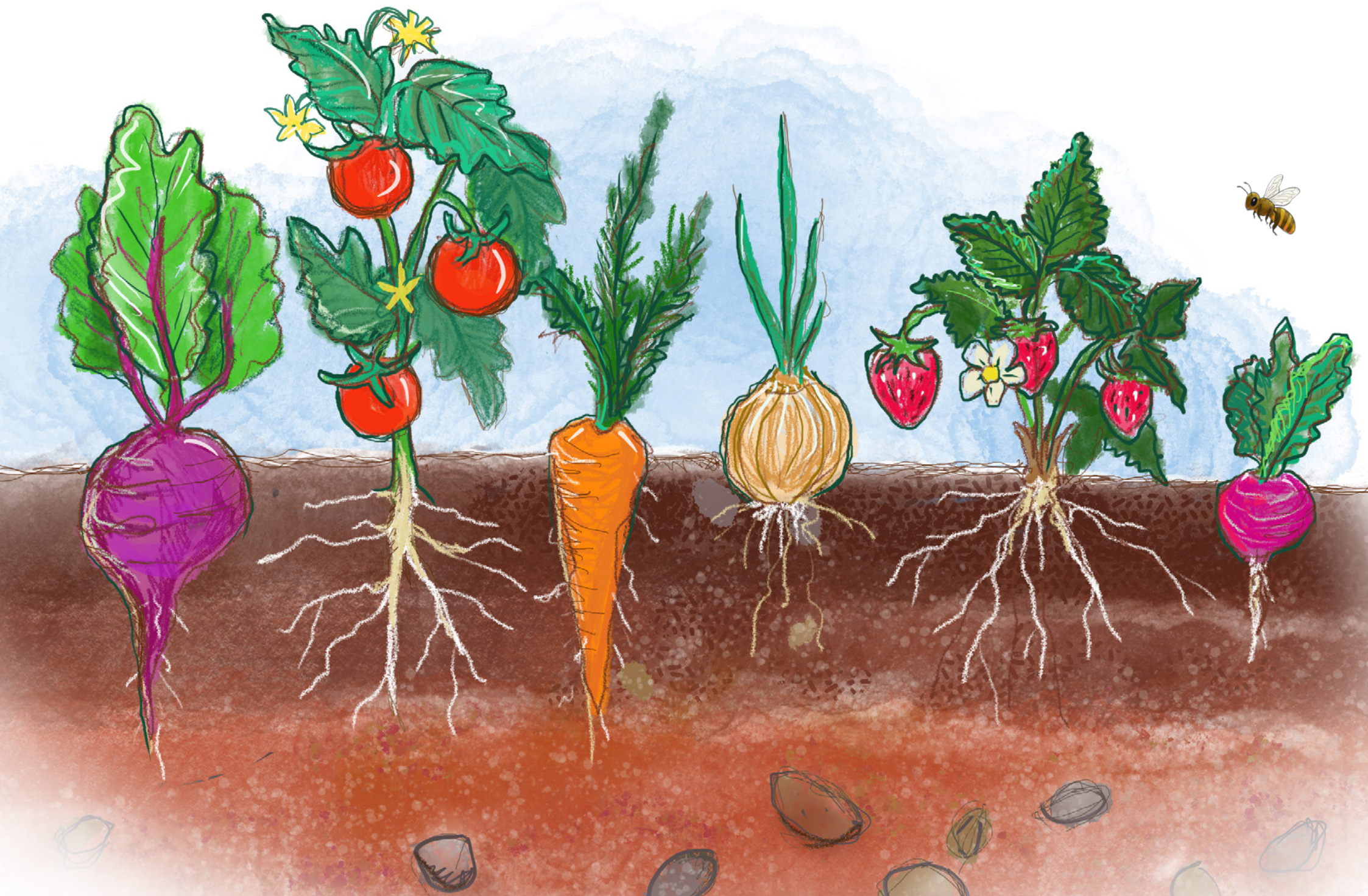
On its own dirt can't **grow plants**.





But when there are **microorganisms** and **beetles**, **insects**, and **fungi** going about their business and breaking down organic matter from leaves and other plants, we have **healthy soils**.

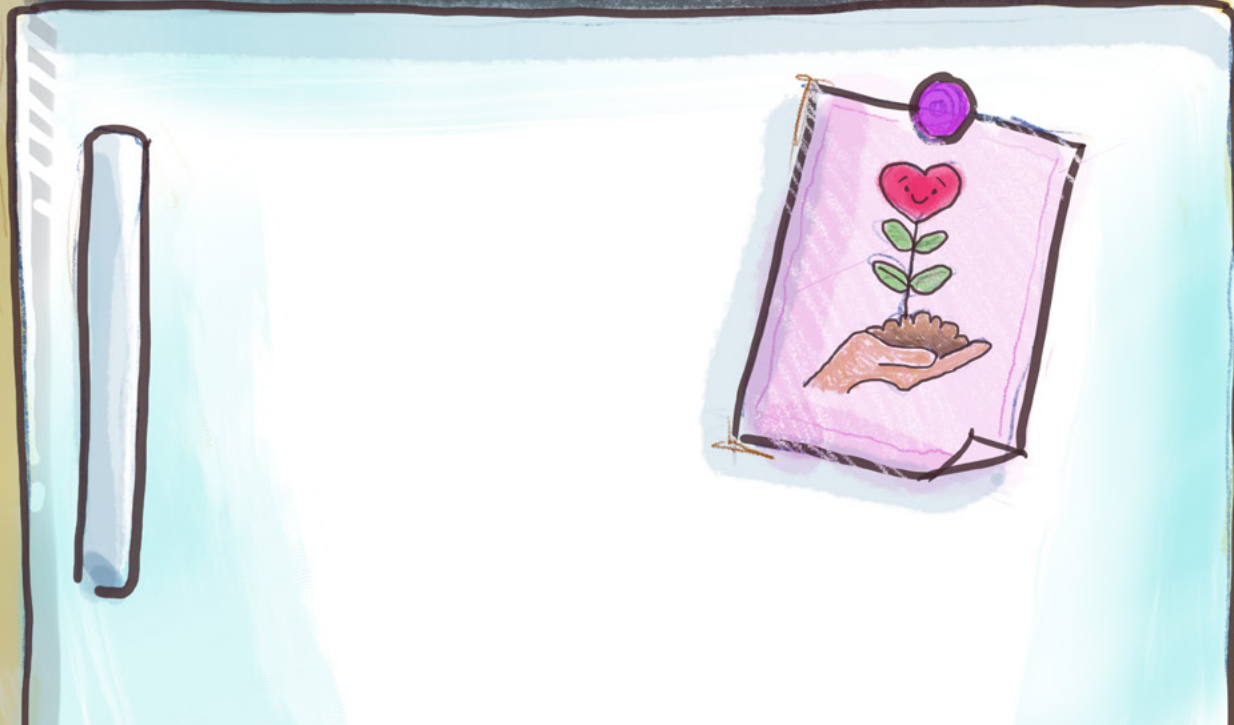
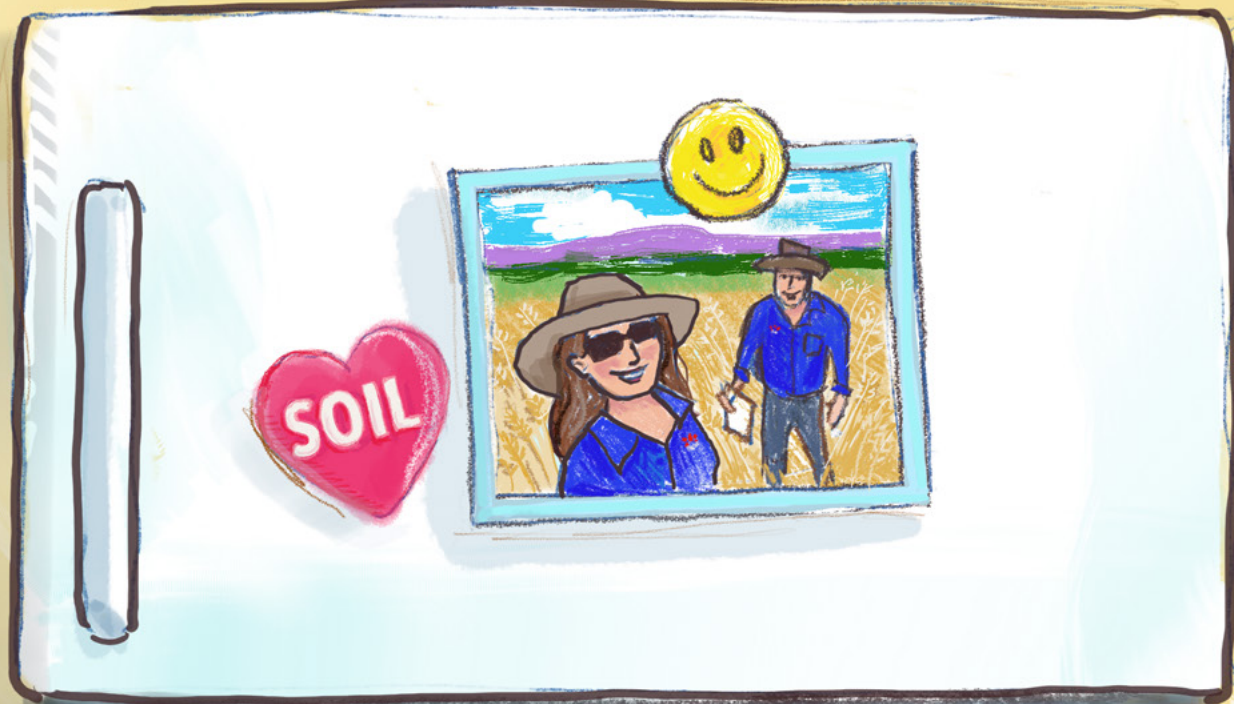
And **healthy soils** grow
food for our lunch!



How do you
know so much
about **soil**?



I'm an
agronomist!
It's my job to
know about
soil!



What this book teaches us about agriculture

Soils are the foundation of our houses and settlements. They are the basis of agriculture and forestry, and the source of our livelihood. Just as importantly, soils perform vital **ecosystem** services in filtering and absorbing water, nutrients and pollutants.

Understanding the importance of healthy soil is important for all of us, and especially for land managers including farmers. When combined with water, temperature and sunshine, healthy soils can grow everything we need.

Farmers value the soil, whether they are growing crops, trees or animals because soil is where it all starts.

Understanding the soil and managing the land to preserve healthy soils or to improve soil is part of doing their job well.



How do the living things mentioned in the story help healthy soil?



There is a complex food web in healthy soils. Organisms, microorganisms and organic matter interact, are consumed by each other and provide nutrients to each other. In this process, nutrients that are needed by plants, and in turn animals, are stored and made available.

Earthworms (referred to in the story as worms but there are many different types of worms in lots of different environments): as earthworms move about the soil they consume organic matter and deposit castings that makes nutrients from the organic matter available to plants. Their movement through the soil helps to aerate the soil which allows water and air to be stored in the soil – most plants need water and air around their roots to grow.

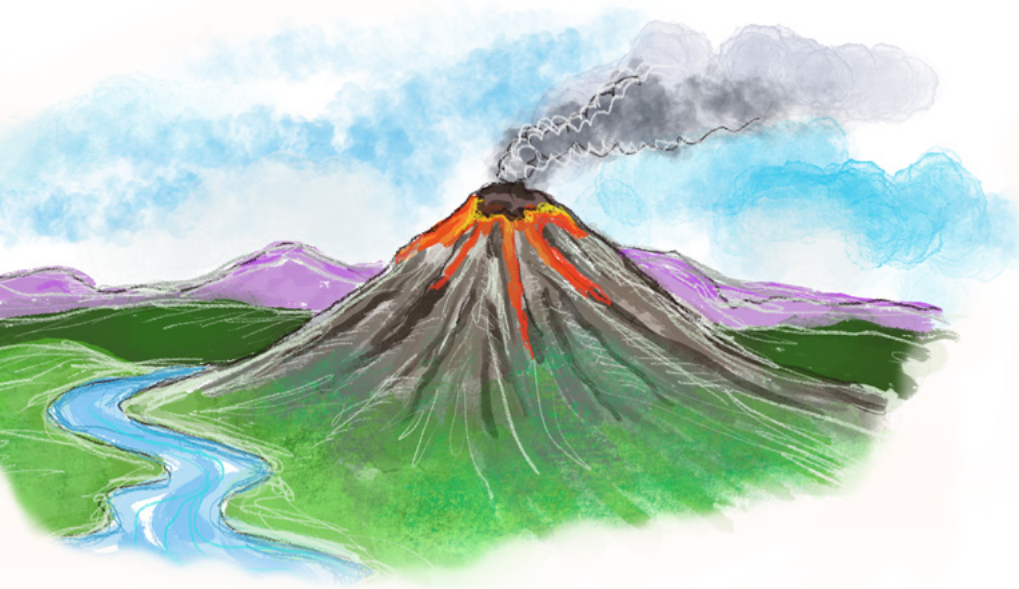
Beetles have a similar role in soil to earthworms, they help to maintain soil structure and make nutrients available to plants. Some beetles are detrimental to certain crops and can impact production in cropping land.

Microorganisms and **fungi** also help in making nutrients available to plants by breaking down organic matter as they consume it.

An **agronomist** is someone who has studied soils and the needs of plants. They are often called on to advise farmers on the health of the crops or pastures that they are growing. If the crop needs some additional nutrition this will often be something that is added to the soil, for example a specific fertiliser.



How is soil formed from rocks?



Soils across the country and around the world vary a lot. This is because soils have formed over millions of years by the gradual weathering of rocks or bedrock. Bedrock and the rocks found in different areas vary according to the **geology** of an area and the geology was formed as the Earth formed. Some geological features were formed by volcanoes, some from rivers and some are formed by pressure of the Earth. When the different features weather or break down they form different types of soil.

Soils also varies in the different amounts of sand, silt and clay it contains. This changes the **structure** of the soil and how it is able to store water and air or support **plants**.

Would you like to explore more about soils?

Our teaching and learning resources are free to download for teachers and parents. The activities, activity sheets and workbooks are aimed at developing a thorough understanding of Australian primary industries for students across the school years.

The resources that include content about soils for younger students include:

- AgPatch: Growing Literacy
- Investigate: soils
- Tocal Virtual Farm for primary schools and
- Activities to compliment this book.



Scan the QR code to go directly to our website or search NSW DPIRD School resources.



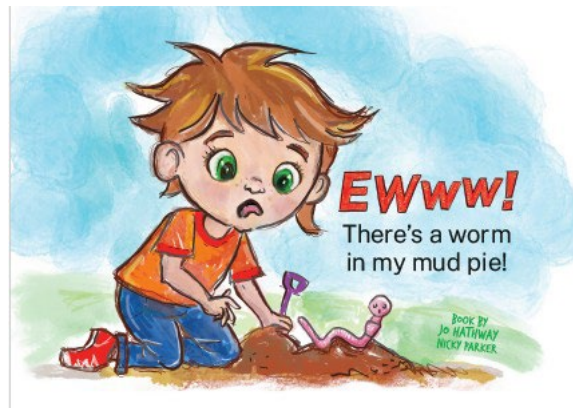


Why would this Mum be happy there is a **worm** in the mud pie?

Come and learn about soils to find out!

Ewww! There's a worm in my mud pie!

Student learning activities to support student learning
from the picture book



Download and print here



This project was jointly funded by the Australian Government
Department of Agriculture, Fisheries and Forestry through the
Partnering to Implement the National Soil Action Plan program, and the
NSW Government.



Australian Government

Ewww... What we learnt about soil

Write a sentence about ...

What this
book is
about ...

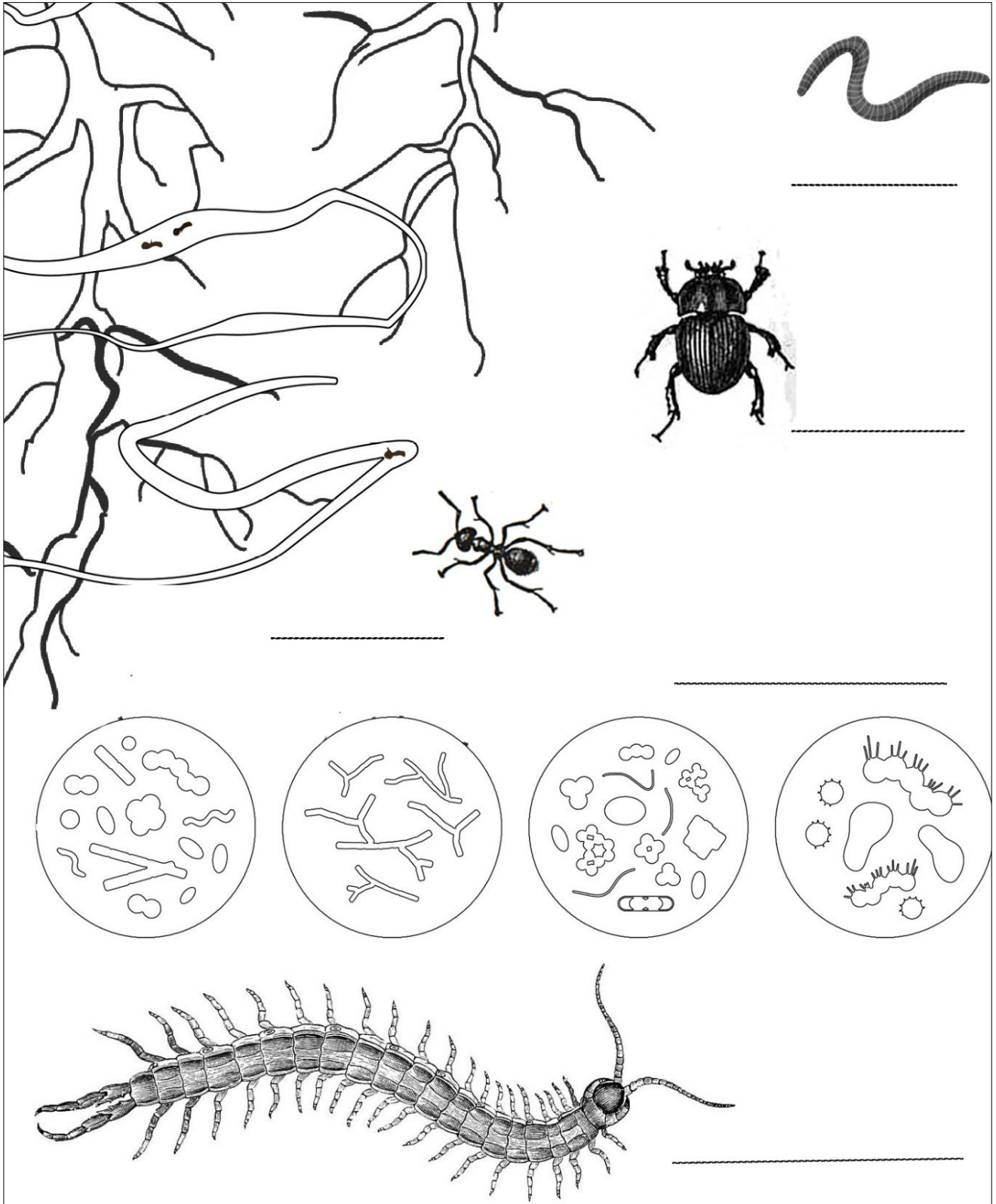
Which
animals
they could
see in the
soil ...

The animals
they
couldn't see
in the soil ...

Do you think
the mud pie
was made
from
healthy
soil? why?

Remember to use words that describe the things you are writing about!

Label the animals that live in this soil.



centipede - ant - beetle - microorganisms - worm

Plants grow from the soil

List some of the plants that you eat...

Plants we eat

Fruits and vegetable come from different plants. Colour in the food on these plants.

