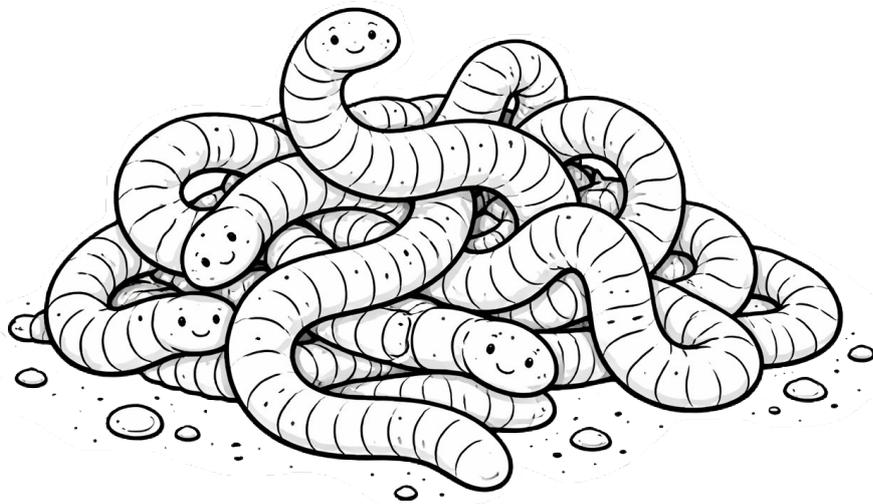


Worm School

Activity Pack



Worm Farming In The Classroom



WE ♥ ♥
WORMS



KS1

KS1 Activity Pack

Teacher's Notes

INTRODUCTION

This KS-1 activity pack has been produced by worm farming educators at **The Urban Worm CIC** with teachers in mind, and contains a range of activities for exploring the world of worms including foundation concepts in environmental studies. Children are encouraged to engage in nature and worm habitats, and to learn about the life cycles and behaviours of composting worms in particular.

The next few pages contain summary infographics for teachers who would like more detailed background information that underpins the activities and factsheets in this pack. These infographics can also be downloaded as posters from our website, at theurbanworm.co.uk/worm-guides

The activities in this pack are approximately sequential for developing a practical long-term syllabus; from discovering worms, to keeping worms, to producing worm compost and using it as a growing medium. The pack is a companion to both a KS-2 equivalent, and a practical set of instructions for building a worm farm and keeping worms in a classroom or similar environment.

Small worm farms are the ideal classroom project for all primary ages and can be the source of multiple potential activities throughout the year. They can be adapted from a range of easily-found domestic containers. The Worm School activity kit includes instruction sheets for four different types of worm farm - a two-bucket system, a swing bin, chest of drawers and a durable 'bag for life'.



A QUICK GUIDE TO KEEPING WORMS

Once set up and containing worms, worm farms are easy to maintain but they do require regular attention, which can all be managed by the class members with a little adult oversight. A worm care sheet is included with the worm farm guide book.

1. Worm farms are perfect for keeping indoors, they should not smell if looked after, and the worms do not escape if they are well fed and happy.
2. Worms need regular feeding, and you will soon learn the extent of your worms appetites, but expect to feed them weekly at least.
3. Conditions need to be moist, with air circulation, but not too wet. Regular checks.
4. Leachate, often called 'worm wee', is the excess moisture that needs to be tapped off regularly to prevent smells and drowning the worms. Check weekly.
5. Worm poo - the black soil produced by the worms and properly called vermicompost or 'worm casts' will need to be harvested when the bin is full. Depending on the size of your bin this could be 1-4 times annually. Worm manure is the best natural fertiliser in the world and we have various activities in the pack to harvest and explore it.

As well as these activity packs, you can watch short demo videos on how to make different types of worm farm at our website:

theurbanworm.co.uk/diy-videos

We also have a thorough FAQ at theurbanworm.co.uk/faq

WHY YOU MUST HAVE HOLES IN YOUR WORM FARM

If your worms are happy they will not want to leave your worm farm. Sometimes people worry they might escape through the drill-holes. It is important to remember **they will suffocate without the air circulation** - and happy worms don't crawl out when you aren't looking!

KS1 Activity Pack

Teacher's Notes

Why We Need Worm Farming



GREENHOUSE GAS REDUCTION



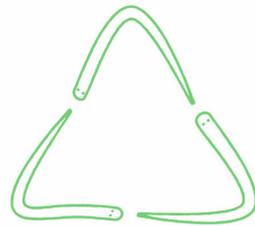
Rotting food waste releases the greenhouse gases (GHG) methane and nitrous oxide, which are 31 and 310 times stronger than carbon dioxide.

WORMS FOR ALL



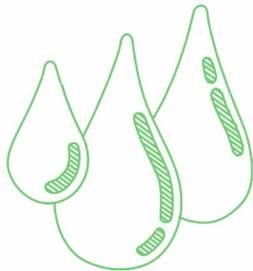
Low cost, low-tech and perfect for the city. You don't need a garden to keep a few worms, they will be very happy under your kitchen sink.

SUSTAINABLE WASTE MANAGEMENT



Worms love organic waste. Solutions for domestic and industrial scale waste management - from food to animal waste - that are efficient, ecological and economical.

WATER QUALITY



Replacing synthetic fertilisers with worm manure prevents the leaching of nutrients into groundwater, causing eutrophication that leads to the death of aquatic life.

AIR QUALITY



Replacing synthetic fertilisers with worm manure reduces toxic pollutants from agricultural chemicals and fossil fuel driven vehicles transporting waste to landfill.

RECLAIMS LAND



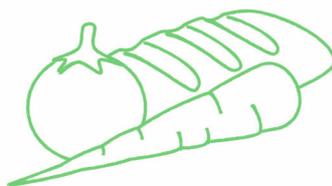
Scientists are discovering the ability of worms to clean toxic waste, regenerating contaminated farmland from pesticide use for the production of food, and the development of healthy communities.

SUSTAINABLE ENTERPRISE



Provides localised organic waste management and agricultural enterprise opportunities by livestock farmers utilising animal waste in worm manure production.

FOOD SECURITY



With less 60 years of global topsoil left due to industrial agriculture, worm farming provides the foundations for healthy food production to flourish.

WATER CONSERVATION



Worm manure has excellent water holding capacity, retaining 50% moisture, building resilience against extreme periods of drought and heavy rainfall.

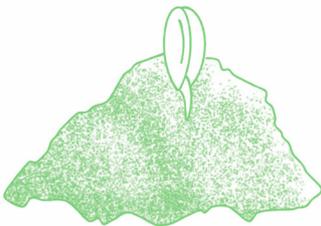
KS1 Activity Pack

Teacher's Notes

Why Plants Love Worm Manure



DIRECT USE



The only fresh manure not to scorch plants. Seeds can be sown direct in 100% worm manure.

HEALTHY PLANT DEVELOPMENT



Teeming with minerals and nutrients essential for the development of strong cell walls.

LONG LASTING



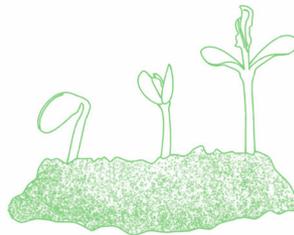
Concentrated nutrient base that slow releases as and when required by the plant.

MOISTURE RETENTION



Holds up to 50% moisture, building resilience against drought and heavy rainfall as a result of climate change.

OPTIMAL GROWTH



Contains auxins and cytokinins, growth hormones promoting fibrous roots and healthy plant development.

HIGHLY CONCENTRATED



One tablespoon provides enough nutrients for a plant to thrive throughout the growing season.

DISEASE CONTROL



Contains fungus eating nematodes and protozoa.

PEST CONTROL



Contains high levels of chitinase - a natural insect repellent.

IMPROVES SOIL STRUCTURE

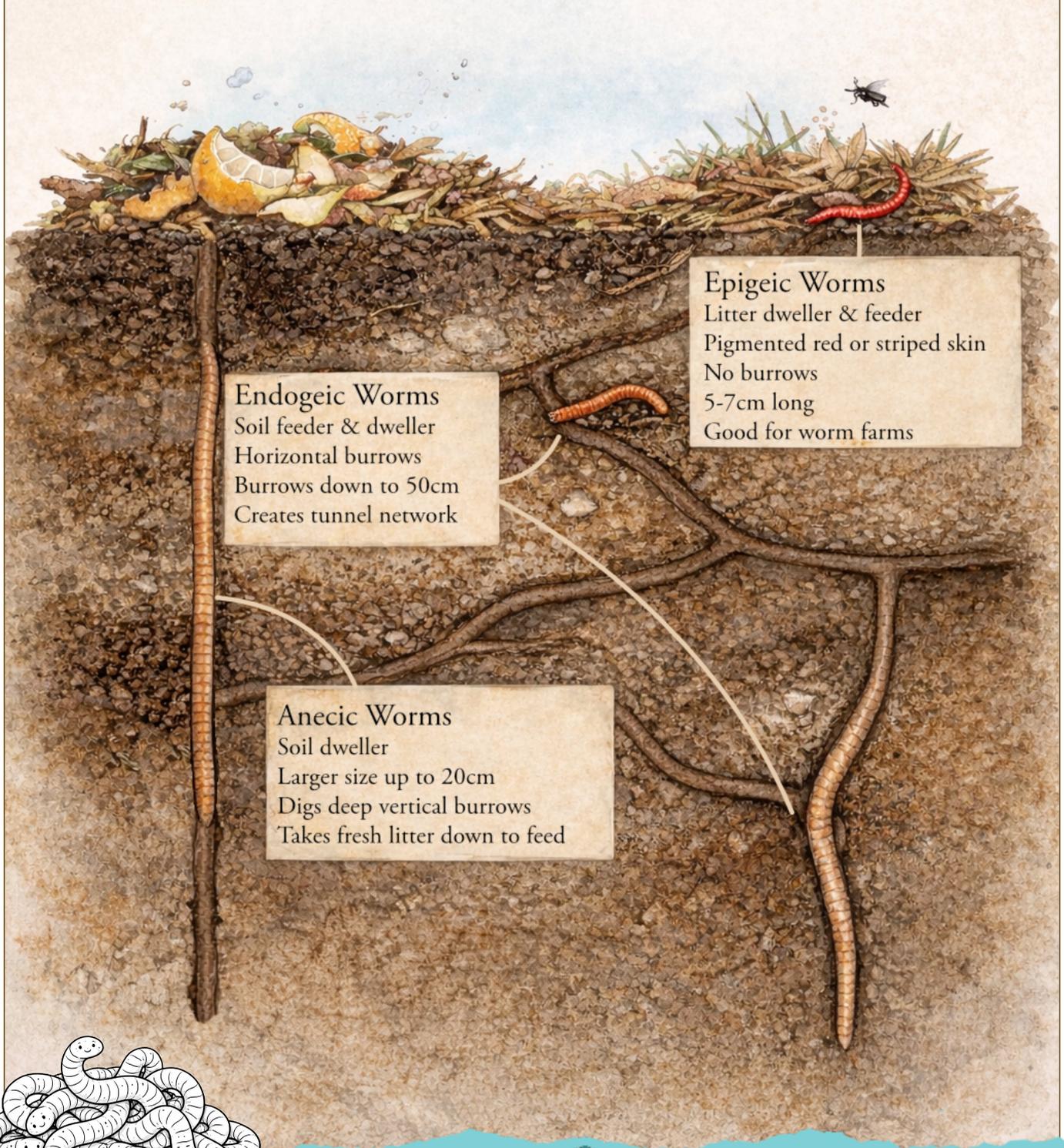


Cylindrical shape prevents compaction, aiding drainage and root development.

KS1 Activity Pack

Teacher's Notes

THREE GROUPS OF EARTHWORM IN THE ECOSYSTEM



KS1 Activity Pack

Teacher's Notes

HANDLING WORMS

This KS-1 activity pack includes activities to search for worms in their natural environment, and we do not discourage handling worms as part of the learning process. We bring worms to workshops ourselves, and we encourage participants to hold the worms if they wish to. However, it is important to bear in mind the following when handling worms:

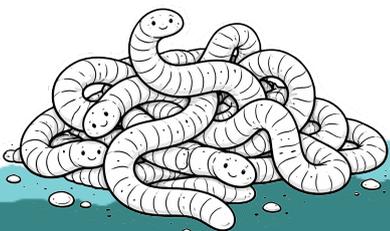
- Being disturbed in their environment is naturally stressful.
- Worms handled in wild environments should be gently put back where they are found.
- Handle captive worms infrequently as regular disturbance will make them less productive, and they could leave the worm farm.
- Worms do not like light so when uncovered to be observed, replace covering material afterwards.

Like any prey species worms are resilient and quickly recover from the shock of being handled, so as long as they are treated gently, not disturbed often and restored to their environment, they will forgive a little handling in the name of science!

IMPORTANT NOTE ON COMPOST WORMS

The focus of this activity pack is on specific species of worms - **surface dwelling composting worms**. They are quite recognisable for their red skin, and in many cases striped red skin. In the outdoor environment they don't burrow but hide under natural litter or in compost-like piles - they don't need to be dug up. Worms found when digging are **burrowing species**. If you are collecting worms for your worm farm, you should not put these into your bins. They are not composting worms. The simple rule to follow is:

- **Red worms only for school worm farms!**



IN THIS PACK

1.1 Why Worms Are Important

A factsheet focused on composting worms; establishes the benefits of keeping worms. Use the 'Why We Need Worm Farming' infographic to support this discussion.

1.2 Let's Go On A Worm Hunt

A class activity to discuss and explore the natural habitats of worms. Activity sheet to survey worm populations. This activity could also provide a worm population for a class worm farm.

1.3 Who Eats Worms?

A quiz sheet helping to explore the place of worms in the food chain. The sheet also tasks children with animal identification.

1.4 What Do Worms Eat?

A fact sheet to encourage exploration of the worm diet, and how to feed a worm farm. The sheet can also be used to prompt comparative discussion on human diets. A separate task sheet includes a drawing exercise.

1.5 I Spy In The Worm Farm

A work sheet companion for exploring the worm farm biome and companion creatures.

1.6 Harvest Time

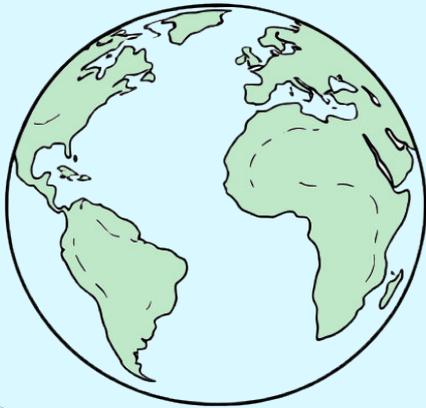
A factsheet explores the benefits of worm manure - use the 'Why Plants Love Worm Manure' infographic with this. When the worm farm is ready for emptying, there is a separate activity sheet for harvesting the manure and planting out seeds and monitoring progress.

1.7 Top Five Poos

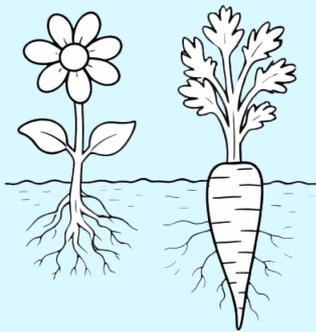
A scatological survey to inspire discussion about decomposition and natural cycles. The worksheet also tasks children with animal identification.

Why Worms Are Important

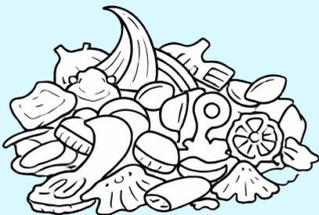
Worms Are Superheroes!



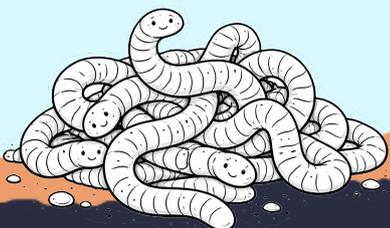
Worms look after us in many ways



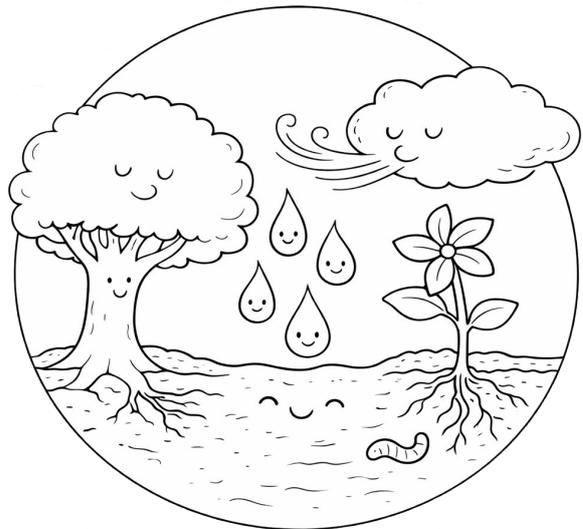
They help everything grow - even our food



They eat our trash and turn it into soil



They save our water in the soil



They can clean the soil, clean the water and even clean the air

Did you know? You can become a worm farmer!



KS1.1

Let's Go On A Worm Hunt



Class Activity

Let's go on a worm hunt

Tiger worms are red stripey worms, and small bright red ones are chestnut worms or brandlings. They live at the surface but prefer to hide away from the light. What are their favourite hiding places?

Where do worms live?

There are different types of worms and they like to live in different places.

Some live underground and burrow down deep in the soil, just coming up to collect leaf litter for their food. They are the biggest worms, up to 20cm long!



Under leaf litter



Rotting logs



Manure pile



Under damp cardboard



Compost bin



*How long is 20cm?
Let's measure a few things to compare.*

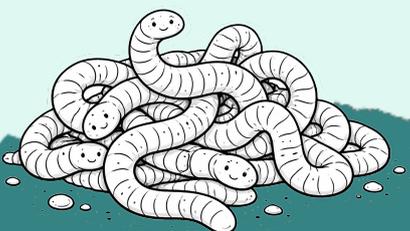
A little way under the surface live worms that dig tunnels and feed on the soil. They are usually about 7-10cm long.

Bright red and stripey little worms (up to 5cm) live on the surface but like to hide... these are our favourites - lets look go for them!



Let's explore different places they may be hiding and record how many we can find. If you pick them up, be gentle and put them back after you have studied them!

Where are the best places nearby to check for worms?



Let's Go On A Worm Hunt

Activity Sheet

where will you look?



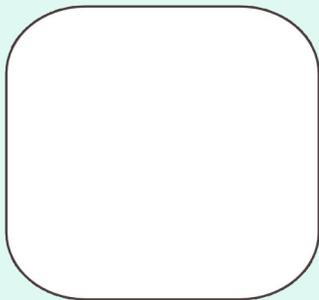
under the leaves?

under cardboard?

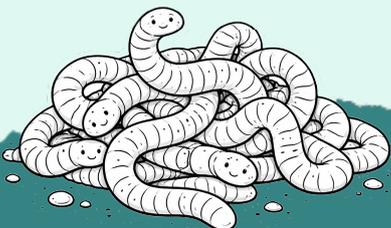


in the trees?

how many did you find?



in the compost pile?



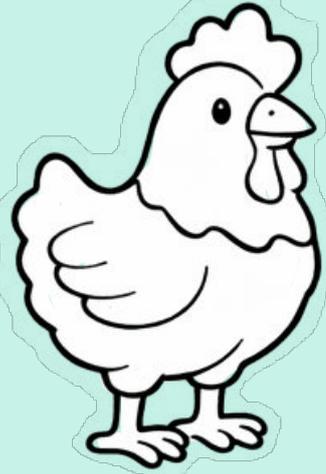
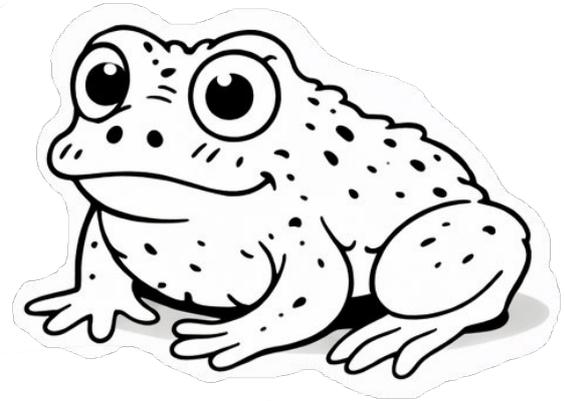
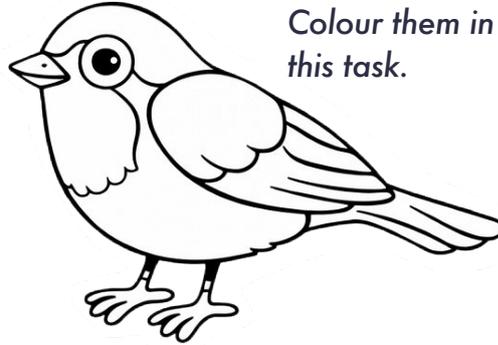
Who Eats Worms?

Quiz Sheet



Can you identify all the animals that love to eat worms?

What colour are these animals? Colour them in carefully to finish this task.



Did you know?

In China you can have a burger made out of worms. What do you think a worm burger would taste like?

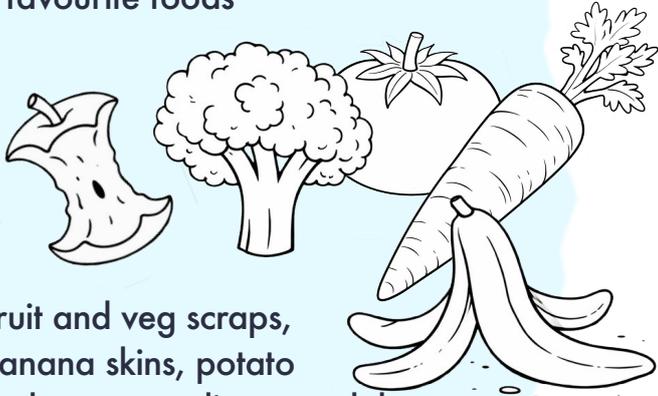


What Do Worms Eat?

The Worm Menu

Yum!

Here are some of the worm's favourite foods



Fruit and veg scraps, banana skins, potato and carrot peelings - and they love melon!

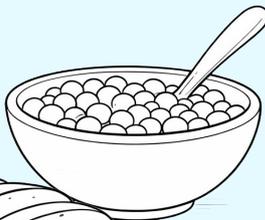


What are your favourite fruits and vegetables?

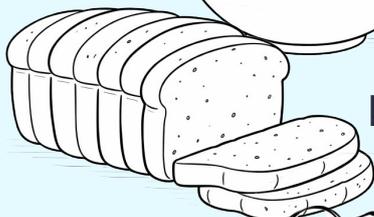


Let's do some colouring - what colours should they be?

cereal



bread



split tea bags



egg shells

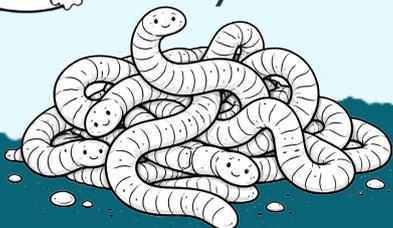


paper and cardboard



Did you know?

worms will even eat your old cotton socks!



No thanks!

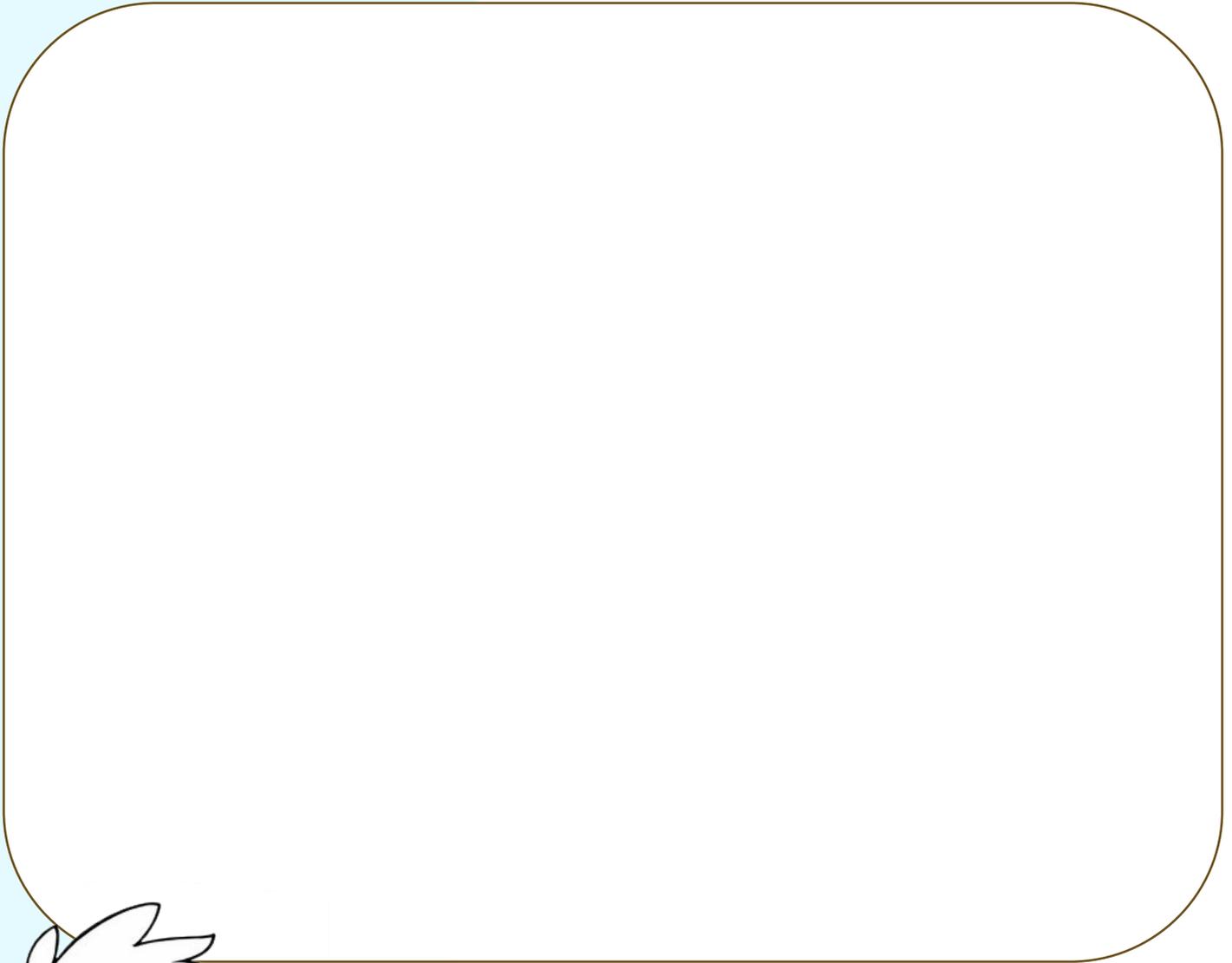
Worms are not fussy eaters, but some things aren't good for them. What are they?



What Do Worms Eat?

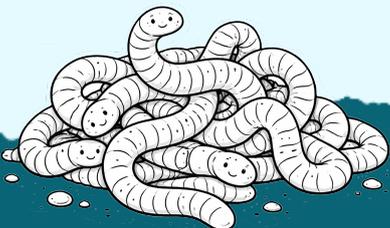
Drawing Task

Draw something that worms love to eat



Did you know?

Worms also love to eat poo - horse poo is their favourite!



I Spy In The Worm Farm



Activity Sheet

if you haven't set up a worm farm yet, explore a compost pile or rotten log.



what can you see?

tick all the creatures you spot in the worm farm



a clew of worms



We like to think of them as a 'squirm'

worm cocoon

This greenish-yellow sphere is a fresh worm egg, or cocoon. They are very tiny in real life... can you see another one on the sheet?

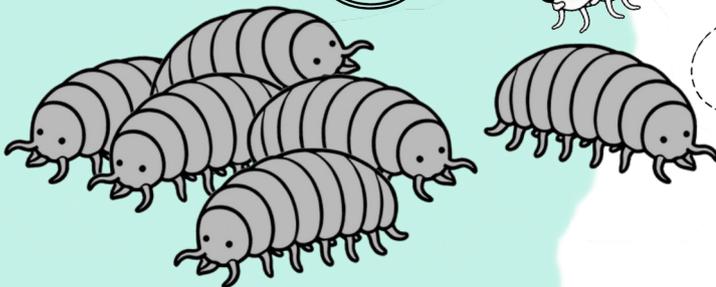


pot worm



These tiny worms are like little white cotton threads. But they are not babies!

woodlice



also known as roly-polies!

Woodlice and earwigs are the worm's helpers in the worm farm - feeding on the waste

spider

Spiders like to catch fruit flies for their lunch. A worm farm is like a tiny insect café for a spider.

fruit fly

Fruit flies are helpers too - they soften the food for worms to eat

earwig

Oh no! This is the only bug we don't like to see. But what is it?



This cocoon has turned orange which means it's ready to hatch - better not touch it!



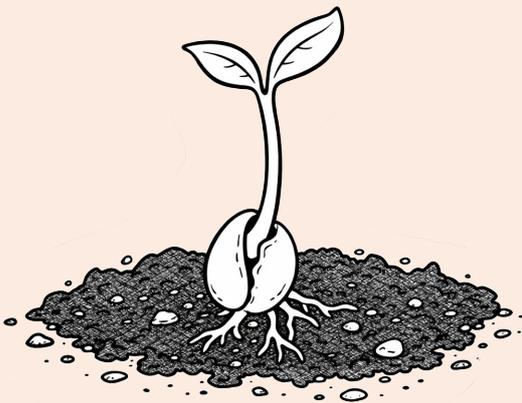
All About Worm Poo

Factsheet



why do plants love worm poo?

When worms eat your kitchen waste and old cotton socks, they make worm manure. It's really good for growing plants.



If you plant your seeds in worm manure, they will be very happy!



Worm manure is like a kitchen cupboard for your plants - full of good food and nourishment.

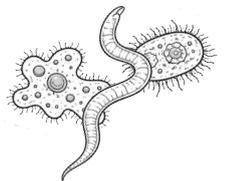


The manure holds moisture so the plant has a good supply of water to drink.



Worm manure is full of good microbes to help protect the plant from diseases, and helps to keep insects away that might eat it!

(Microbes don't really have swords, they are so tiny you can't see them, and they look more like this >>>)



How much is a tablespoon?
How much is a teaspoon,
or a dessert spoon?



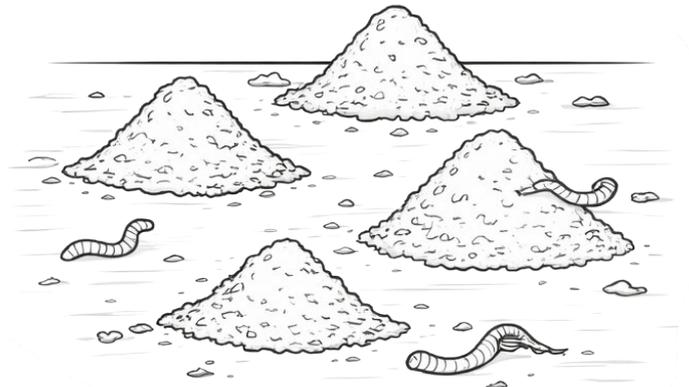
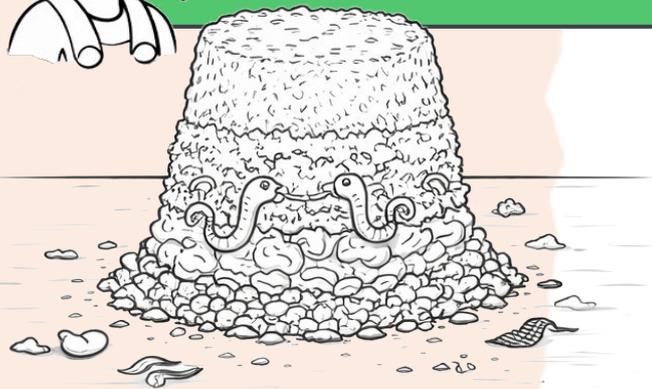
One tablespoon of worm manure will feed a plant for three months while it is growing.

Harvest Time

Class Activity



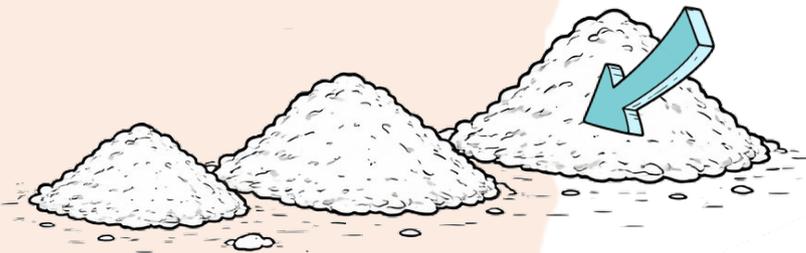
Shall we plant some seeds in worm manure, and see how they grow?



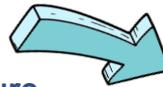
When most of the food in the worm farm has turned to manure, you can empty it out onto a table for harvesting.



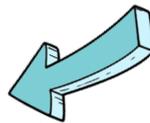
We don't want to plant the worms! Take all the manure and make small piles. The worms don't like light so they will hide in the piles. Leave for 15 minutes, take some of the manure away, and put stray worms back in the worm farm with more food. Repeat until all the worms are safely back in the worm farm.



Now you have your worm manure, you can plant some seeds. You can mix one portion of worm manure with nine portions of soil or compost to make the manure go further.



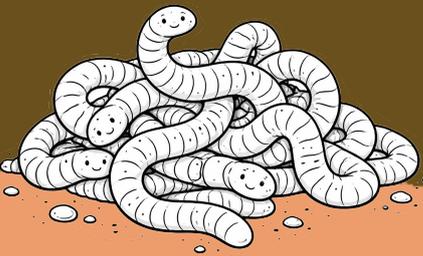
Take some seeds - flowers and herbs grow quickly and plant them in pots in your special worm mix.



watch them grow!

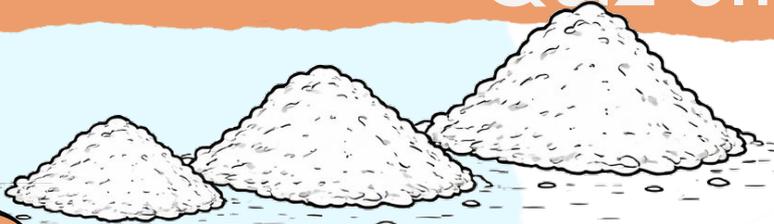
Would the plants grow as big without worm poo? How could we find out?





Top Five Poos

Quiz Sheet



What are each of these animals? Colour them in and connect them to their poos!

1

Our favourite poo is definitely worm poo, because it's so good for the planet.

2

Worm farmers love horse poo because it happens to be a worm's favourite dinner.

3

Cowpats are also a good food for worms to eat, they contain lots of their favourite microbes.

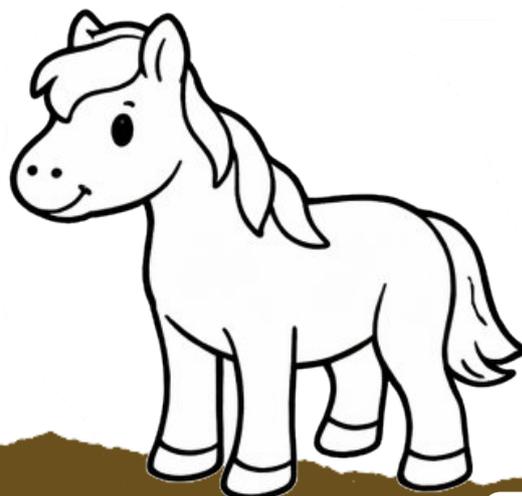
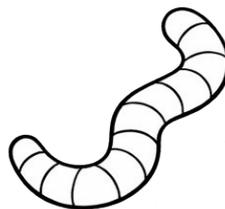
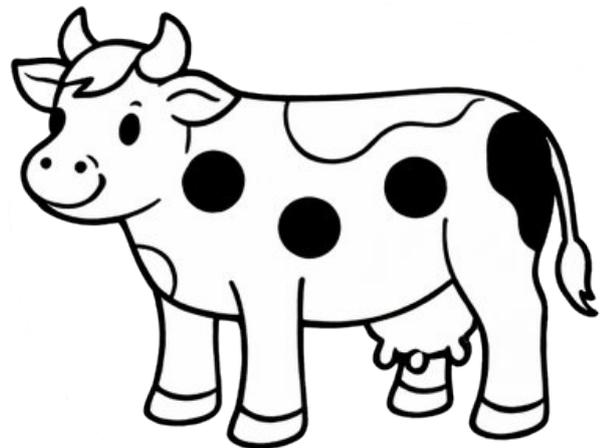
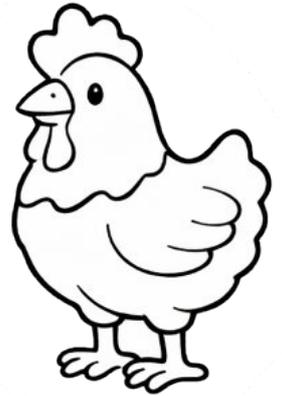
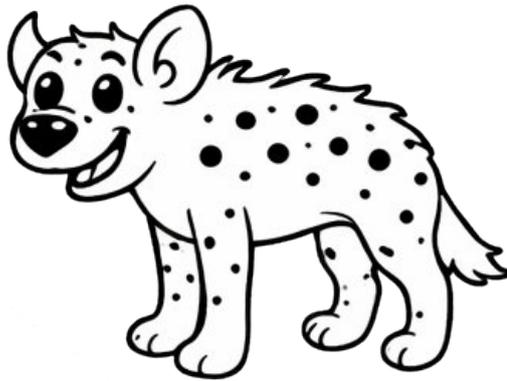
4

Chicken poo contains a lot of nitrogen which plants love to help them grow.

5

Hyenas are great recyclers because they eat all the waste other animals leave.

Did you know? Their poo is white because they eat a lot of bones.



KS1 Activity Pack

End Notes

BOOK US FOR TALKS, VISITS & INSTALLS



- Engaging talks and activities for the classroom led by the experts from The Urban Worm
- Staff CPD, parent & community engagement projects
- Setting up worm farms, whether small classroom versions or large-scale kitchen waste composting
- CPD visits to Worm HQ in Nottinghamshire



The Urban Worm CIC is based in Nottinghamshire, and was founded in 2013 by Anna de la Vega, the UK's leading expert on vermicomposting. Since incorporation we have been on a mission to promote the benefits of worm farming as far and wide as possible. Anna is a widely-recognised speaker on the international vermiculture circuit, with a passion for the worm that enthuses and engages. Anna and her team have been delivering face-to-face classroom and community projects for over a decade across the UK and beyond.



The organisation can advise, design, install or even maintain large-scale composting worm farms, including managing whole-school kitchen waste, and has worked with major corporations on designing sustainable waste management systems with worms.

Curious to see how we manage a large worm composting system at our base in Nottinghamshire, where we produce the exceptionally high quality compost known as **Magic Manure**? We are able to offer staff CPD visits to the farm to demonstrate how professional composting works.

If you are interested in extending your worm farming activities and would like our input, email us at the address below for more details, or check our website.

info@theurbanworm.co.uk
theurbanworm.co.uk

EDUCATIONAL DISCOUNT CODE

We are pleased to offer an educational discount in conjunction with the Worm School Activity Pack - for 10% discount on all worm farming products in our shop, excluding Magic Manure. Purchases must be delivered to education institutions or other established service providers. Contact us for more details, or use the following code when checking out at our shop:

KS1-2app



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