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Terrix City, discovering the hidden world on your plate

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Click to start the adventure

Skip the introduction

Reading Guide



Click the icons to move through the different parts of the food system.



Look out for the bees and click on them to discover printable stickers!



Click on the compass rose to return to the map.

nitrogen

Click on the coloured words to find their definition

Become an eco-hero!

Click and discover tips or activities to become an eco-hero.

True or False

Click to reveal the answer.

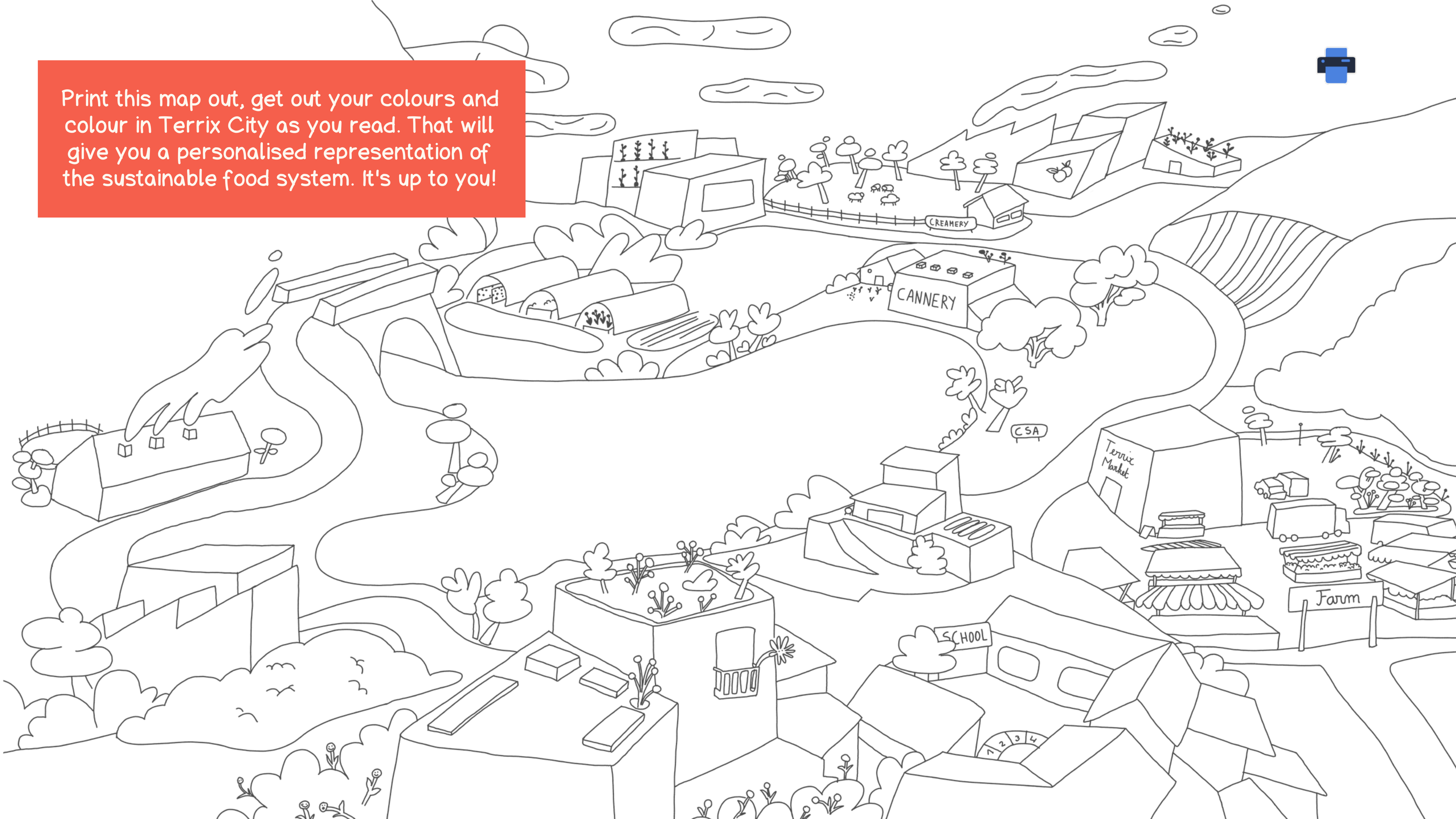


Here are Marah and Arti. They have always helped make Terrix City ecological and sustainable. After school, they often visit their friends, who are involved in the day to day life of the city. What an opportunity because every meeting with Marah and Arti is an adventure!

See for yourself and come along on their walk to become an eco-hero in your own neighbourhood.

Characters inspired by the drawing of Filippo from the Aldo Moro school, Bologna, Italy.
Texts: Margaux Vidotto, Véronique Saint-Gès, Agnès Lelièvre
Illustrations: Claire Painchaud

Print this map out, get out your colours and colour in Terrix City as you read. That will give you a personalised representation of the sustainable food system. It's up to you!



Meet Terrix,
a super eco-hero!

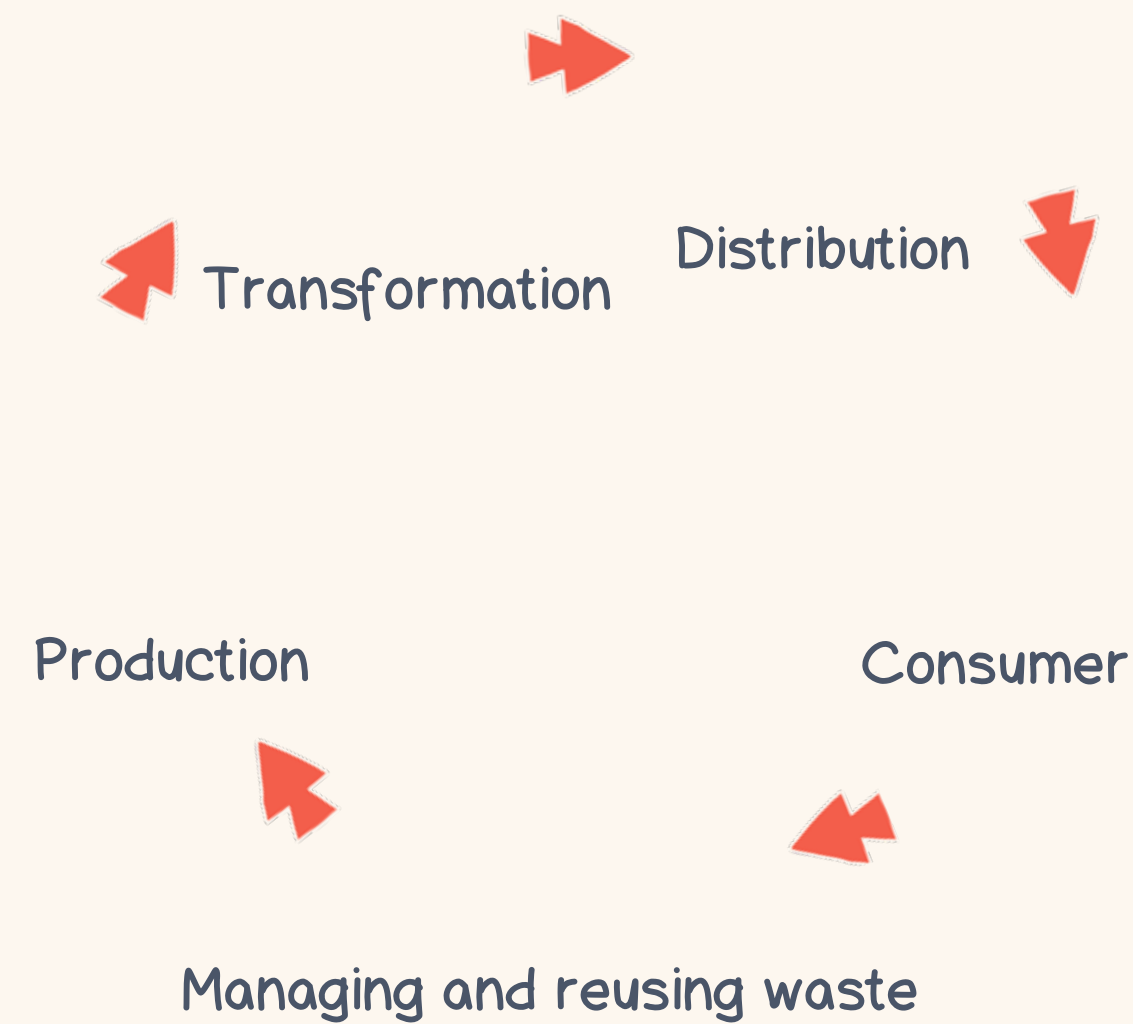


What does being an eco-hero mean?

In this e-book, being an eco-hero means behaving responsibly to help achieve a sustainable food system. For example, it means preserving biodiversity, eating local fruit and vegetables and products from farms committed to animal welfare, avoiding waste, and recycling. The weco-hero's quest is to help produce enough healthy food for everyone.

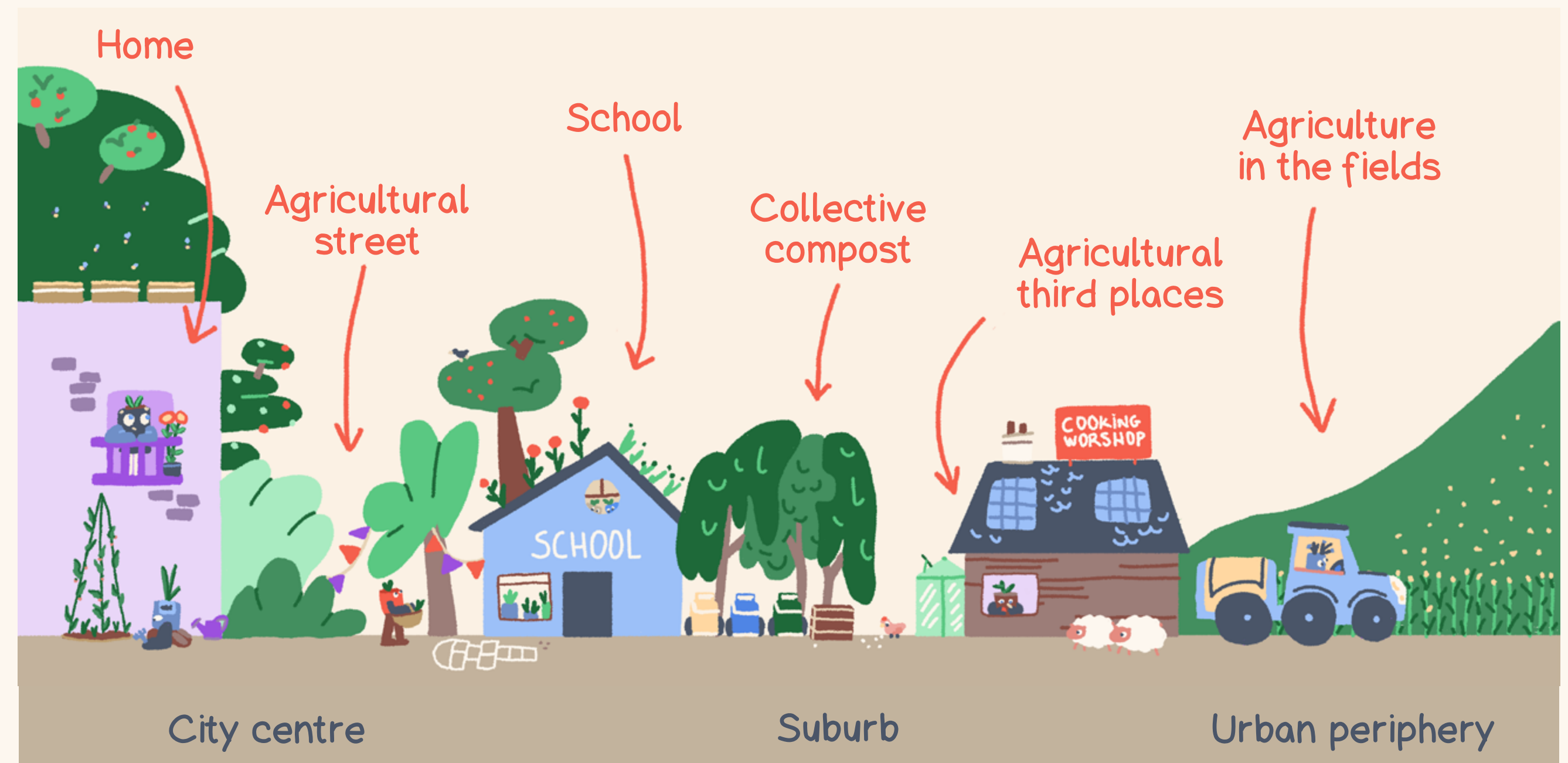
Eco-heroes need to know about the environment, the food system and all the steps that food goes through before it reaches their plates. **To become an eco-hero we suggest you follow Marah and Arti as they discover Terrix City.**

The food system



The “food system” means everybody and everything involved in producing, processing, distributing, consuming and recycling vegetables, fruit, meat and all the products on your plate.

The food system is considered sustainable when it contributes to economic and social development while safeguarding the environment. That means preserving natural resources for our generation and those yet to come, respecting the welfare of people and animals, and providing food at a fair price that guarantees a good income for farmers.



Contents

[Printable map](#)



The eco-heroes of Terrix City



Pansy,
Farmer



Poly,
Bike transporter



Atlas,
Trader



Batavia,
Head cook



Fungi,
Street
sweeper

Terrix City

Click on the compass rose and let's discover the Terrix City map together.

Let the adventure begin!



Click to display the contents.





**Unlock the secrets of
how your food is produced**



Hi!

Welcome to my farm!

Come and discover the diversity of agricultural land.

Cereal growing

Whether on the plate, in the kitchen or on the table, cereals are everywhere. Bread, pasta and biscuits are made from cereals.

A cereal is a plant grown for its seeds, which can **be used to feed humans and animals**. Cereals are usually grown in large fields in the open. The most heavily consumed are rice, wheat and maize.

In Terrix City, spelt, sorghum, amaranth and oats, lesser-known crops, are making a comeback, particularly for use in vegetable-based drinks. Cereals, like other plants, grow through photosynthesis and the care that Pansy provides.

What is photosynthesis?

It is a biological process where plants and trees absorb carbon dioxide (CO₂) through their leaves and water through their roots. They convert these into sugar using the energy of the sun and release the oxygen which they do not need. So thanks to photosynthesis, plants are able to feed themselves.





**Become
an eco-hero!**

Build a mini greenhouse!

Growing vegetables under glass

Market gardening means growing vegetables.

A greenhouse is a closed or half-open glass or plastic shelter in which plants grow. Growing in a greenhouse protects the plants from **pests** and weather conditions that could damage or destroy the crop. Growing in a greenhouse allows for a higher temperature than growing outside. The seeds germinate faster and the growing period is extended, allowing vegetables to be produced for longer.

In Terrix City, the greenhouses are equipped with small computers and sensors to monitor temperature, air quality, light and irrigation levels. *Pansy* can monitor this information remotely on her phone.

What is irrigation?

Irrigation is an agricultural technique that provides water to plants. There are different ways: with a watering can that imitates rain, or with a thin stream of water that imitates a brook.



Legumes in open fields



Legumes are a family of plants that includes beans, peas, broad beans, lentils, soya, alfalfa and clover. They provide carbohydrates and proteins which are essential nutrients for your body.

When they are growing, legumes require less fertiliser because they capture the nitrogen they need, thanks to **bacteria** on their roots.

So, *Pansy* does not have to add fertilizer to the soil to feed the plant. When legumes are grown in open fields, Violet may decide not to harvest them, but instead bury them to feed the soil and sow the next crop directly. This succession of crops saves money and preserves the quality of the soil.

What is nitrogen?

Nitrogen is a chemical element which plants feed on and convert into proteins to grow. These proteins are also essential for human and animal nutrition.

Agroforestry

Agroforestry involves growing plants of different heights together because they provide mutual support and promote biodiversity. This is because trees have very deep roots, which ensure that water is able to seep well into the soil. Hedges, separating plots of land, protect crops from wind and limit the risk of flooding. Agroforestry also helps protect biodiversity, as trees and shrubs provide a home for birds and insects. Finally, agroforestry allows carbon to be stored in the timber through **photosynthesis**. For all these reasons, agroforestry is a mainstay of **agroecology**.

In Terrix City, hazelnut trees are planted in a wheat field and a meadow is planted in an apple orchard. Farmers plant hedges around their plots and trees in their fields to improve their production and provide shade for their animals.

Which trees are planted for agroforestry?

In agroforestry, farmers can plant fodder trees, whose foliage can be eaten by animals.

They can also choose honey trees that attract bees with the nectar from their flowers.

Become an eco-hero!

Have fun recognising trees with the “who is it?” game.



Mixed farming

Mixed farming is an agricultural production system that combines one or more crops with raising at least one animal, such as chickens, horses, sheep or cows. This makes it possible to produce **feed for the animals** on site and to produce a wider range of goods **for sale locally**. These include **vegetables, cereals, fruit, meat and eggs**.

Here in Terrix City, sheep graze in the apple orchard and ducks weed the rice fields, allowing the farmers to do without weedkiller. Terrix City's horses plough the fields and their **manure** is used to fertilise the soil.

What is fodder?

Fodder, made from the green parts of one or more plants, is the basis of animal feed. Leaves, stems or unripe seeds make up the fodder.

Become an eco-hero!

On the map, draw an animal and a crop on your ideal farm. Ducks in the rice fields, sheep in an orchard, you name it!





Hi!

Welcome to my farm!

Find out about agricultural installations from pavement to roof

True or False

8. Floriculture is part of agriculture.

Become an eco-hero!

Take part in a seed swap. Collect seeds from flowers, vegetables and herbs, dry them on paper towels and exchange them for seeds of different varieties. This will let you discover the immense diversity of plant species.



Agricultural installations from pavement to roof

The agricultural street

Young and old, experts and beginners alike, plant the street with fruit, vegetables, herbs and flowers. Mini vegetable gardens and flowerbeds are installed beneath the trees. New street furniture is appearing, for example planters built into benches. A variety of edible plants decorate the street. These small agricultural areas in the city are places where plants such as wall barley, wild carrots and poppies, which are considered invasive weeds in large-scale farming, can be protected.

In the streets of Terrix City, these kinds of planters have been put in for the enjoyment of Terrix people who pick fruits and vegetables for small or large meals. The aim of these facilities is to provide food from local production but also to re-nature the city, combining green spaces and edible landscapes.

Why is it important to have green spaces in the city?

Having vegetable gardens, parks and flowers in the city makes you happy. Being involved in a vegetable garden, putting flowers on balconies, or visiting a farm near your home give you a sense of well-being and reduce stress.



Collective gardens

Collective gardens are sharing places inspired by the allotments of the 19th century, which allowed families to enjoy a green space, to have opportunities to meet people, and to produce their food. Today, these collective gardens have sprung up all over and take different forms depending on their use and management. For example, allotment gardens are intended for household production, shared gardens are managed collectively, while school gardens are available to pupils. Some of these places of community and **agricultural production** help the **integration of people** who are far from employment or **boost social mixity**.

At their school, Marah, Arti and their friends have a school garden! They follow the principles of **agroecology** and manage to grow lettuce, tomatoes and herbs using **compost** made from **food waste** from the canteen. Together with their teacher, they also learn about the plant cycle and the role of natural elements such as the sun, wind and rain.

Become an eco-hero!

Sow the seed of solidarity by joining a shared garden in your town or start a school garden at your school. From the garden to the plate, the route your food takes is infinite, and you are at the heart of the action!

What are seasonal fruits and vegetables?

Seasonal fruits and vegetables are foods that are consumed when they ripen naturally in the area where they are produced. For example, strawberries ripen naturally in summer, while leeks are harvested in winter.



Become an eco-hero!

Let's look at a local third place operation, where you will find many activities: gardening, cooking, repair workshops. Visit your local town hall for more information.

Agricultural Third Places

Agricultural Third places operations are places outside the home, school and workplace where people come together to raise awareness of sustainable food production and consumption. These places encourage exchange and sharing, and include cultivated land and workshop areas for learning agricultural and craft methods. Crowds gather at festive and cultural events or over good food cooked in **collective kitchens**. Look after your needs, food and others all in the same place!

In Terrix City's agricultural third places centre, Batavia teaches Marah and Arti how to cook vegetables and fruit grown by *Pansy*. The Terrix take courses in **market gardening** and are involved in developing, operating and making decisions for the farm. Everyone has the power to act and everyone's ideas feed into the place.

What is sustainable consumption?

Adopting sustainable consumption means limiting your consumption of products that are packaged in plastic and have travelled thousands of miles. Sustainable consumption means wasting less and recycling as much as possible!



Agriculture at home

Growing vegetables, fruits, herbs or flowers at home is possible! The garden, balcony, terrace and even the kitchen are home to more or less technical solutions for producing basil, mint and cherry tomatoes at home. For example, indoor mini greenhouses allow salads to grow **hydroponically** under artificial light. On your balcony or terrace, soil can be reconstituted from **food waste** in growing trays in which **the layers of substrate** are stacked like lasagna.

Here in Terrix City, herb-growing has become the specialty of *Batavia*. She grows basil, parsley and bay leaves to flavour her dishes. Some aromatic plants also have the power to repel pests that come to town: lemongrass is used to keep mosquitoes at bay, and rosemary for flies, for example.

What is this lasagna technique?

Lasagna in agriculture is a layering of various materials. It could mean alternating dry brown layers such as cardboard or straw with green layers such as vegetable peelings or lawn clippings.

Become an eco-hero!

Germinate seeds in cotton wool.



Become an eco-hero!

Grow lettuce with hydroponics! Use the heart of the lettuce, put it in a little water and put it on the window sill. Make sure that there is always some water in the container. You will see new leaves growing.



A green roof



It is possible to grow plants on the roof of a house, school, building or restaurant if the slope and strength of the roof allow it. There needs to be easy access to bring in water and also to bring in the tools and **substrate** that are vital for rooftop planting. Natural resources such as sun and wind must be taken into account to choose the right productive crops. A green roof can retain rainwater, **recycle urban waste** into **compost** and limit extreme temperature variations in the building.

In Terrix City, some rooftops have been converted for **hydroponic** crops, which contribute to the local food supply. The roots of plants grown this way are irrigated with a liquid solution enriched with nutrients. Other techniques like container gardening or open-ground gardening using soil are also used on roofs.

What is a substrate?

A substrate is a base in which plants develop their root systems so they can stand upright. The nutrient and water supply to the plant varies with the substrate chosen.

Green roofs need a light substrate or cover using a thin layer of soil.



Hi!

Welcome to my farm!

Come and discover the animals in town.



Bees in the city

Keeping bees in the city requires special conditions: the presence of **nectar-bearing plants** with a wide variety of flowers and a rather quiet, dry place, sheltered from the wind and full sun. With all these conditions in place, the well-being of the bees is guaranteed. For food: **bees feed on nectar and pollen that they collect from flowers**. If food is in short supply, the beekeeper is always there to provide the necessary sugar in syrup or solid form. Bees, and other insects, **pollinate** plants, allowing crops to grow.

Several hives have been installed on the roofs of the Terrix City cannery. The bees produce the local honey **distributed to the Terrix**. It is made from nectar collected by the bees and passed on to each other inside the hive before being put into the honeycomb. The honey can be harvested when the honeycomb is full!

What is a nectar-bearing plant?

A nectar-bearing plant, which is appreciated by bees, is a plant which produces a good quantity of nectar and pollen.

What is pollination?

As they move from flower to flower, bees collect and exchange nectar and pistils inside the flowers, thus allowing the plants to reproduce.

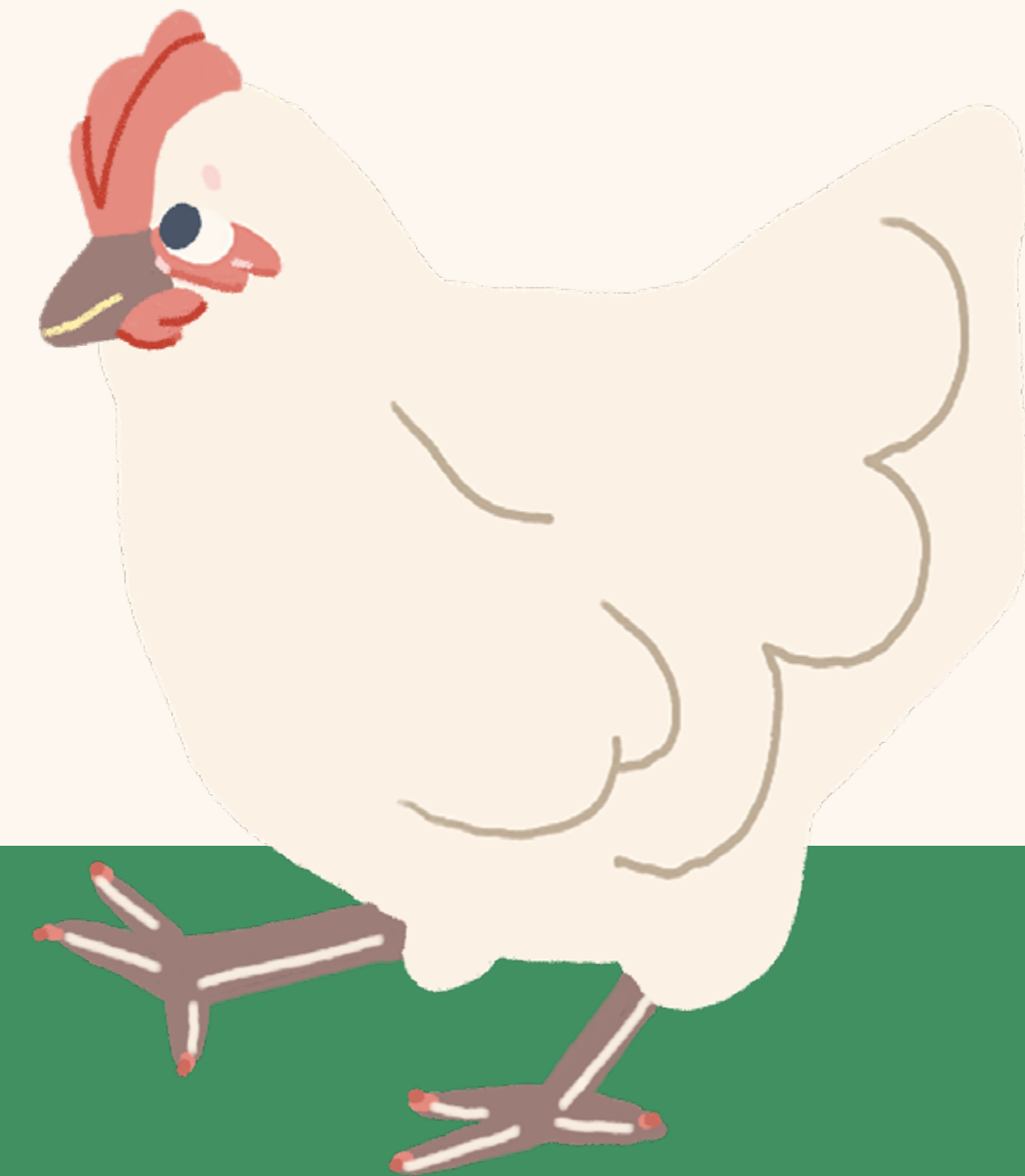
Chickens in the city

Small chicken farms are sometimes set up in town. These animals, which are essential to a **sustainable food system**, feed on slugs that nibble on lettuce, but also on **green waste** from the house. They each consume between 90 and 50 kg per year! The quality of the eggs they lay depends on a varied diet of vegetable peelings, dry bread, cereals and fruit.

In Terrix City, chickens roam freely around the city. The Terrix have even created a common henhouse so that everyone can collect eggs in exchange for regular maintenance of the pen and care of the hens. After they eat the eggs, the Terrix make sure to save the shells for use in **a compost bin** or **worm composter**.

Become an eco-hero!

Place eggshells around your plants.
This will repel slugs.



Why do you need to crush eggshells before composting them?

Because smaller pieces of shell break down more easily and add their minerals to the compost more quickly.

Fish in the city

Thanks to aquaponics, fish are allies in vegetable production. Aquaponics is a **growing system** in which plants and fish live together. Fish droppings are partly dissolved in the water. They are also filtered and digested by **bacteria** to become **good nutrients** that can be absorbed by plant roots. Together, the action of the bacteria and the plants allows **the water to be purified** and then reused for the aquarium.

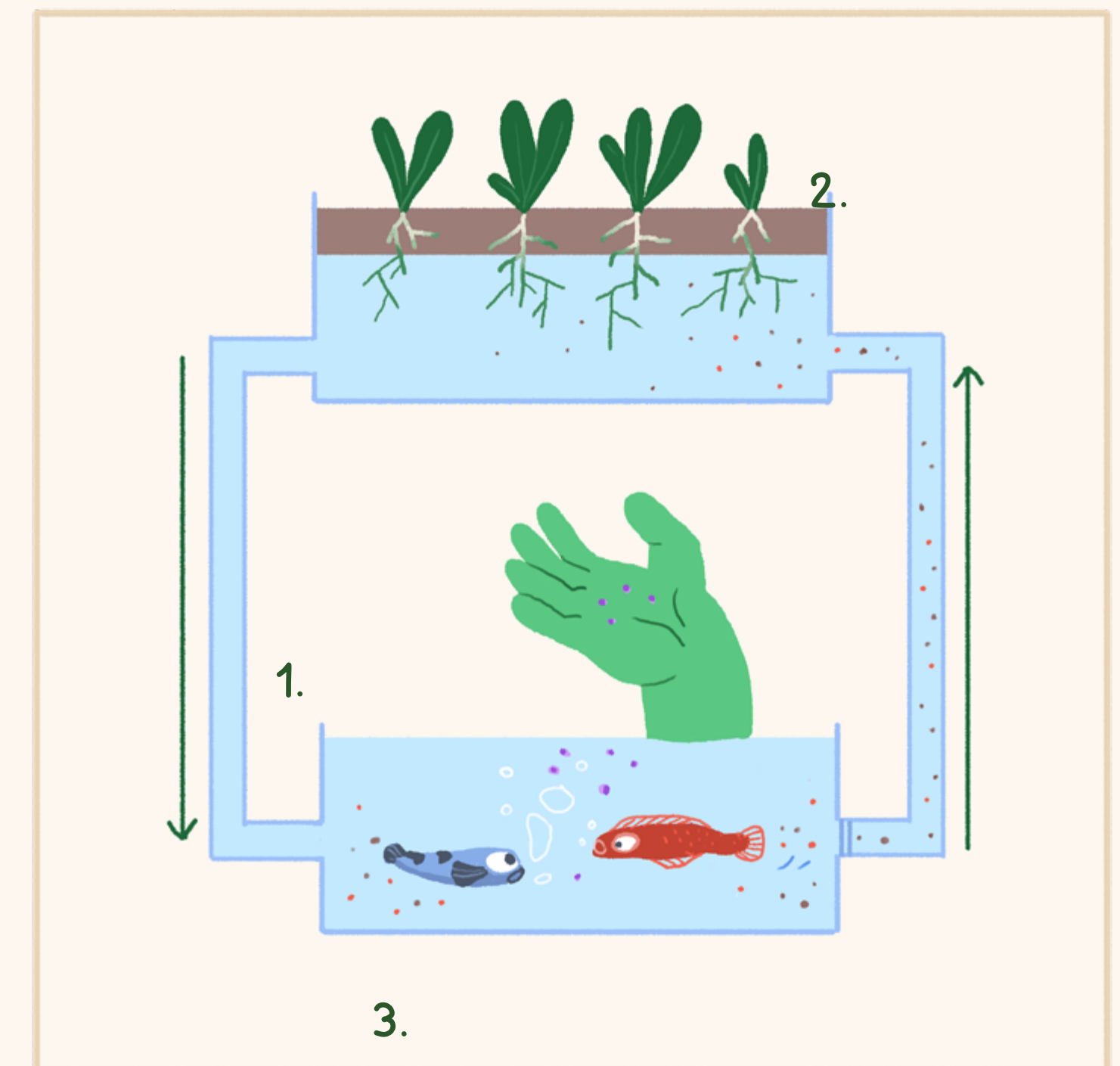
In Terrix City, residents have chosen this system to encourage the cultivation of pickling cucumbers, chilli peppers, melons, chives and strawberries, among others. On balconies and in gardens, fish cohabit with the plant crops of the Terrix.

What is a bacterium?

A bacterium is a tiny living being, a micro-organism, which feeds on organic matter (material produced by living things) and breaks it down. There are millions of bacteria on Earth and they are essential to **ecosystems**.

Become an eco-hero!

Discover an aquaponic farm



Become an eco-hero!

Meet the urban shepherds and discover the farm animals raised near you. More information can be found at your local town hall.

Ruminants in the city

Sheep, cows and goats are great allies in limiting weed growth and maintaining green spaces. This environmentally-friendly natural mowing method is called **conservation grazing**. Thanks to the grass-eating animals that maintain the gardens and parks, the city can use less polluting machinery. Conservation grazing is therefore a responsible and sustainable approach that makes it possible to eliminate weeds while feeding these ruminants and creating interactions between animals, children and adults.

In Terrix City, the shepherds who look after the flocks organise educational activities at Marah and Arti's school to raise awareness of the benefits of conservation grazing. They meet the animals and even watch the shearing!

What is a weed?

A weed is a plant that you do not want growing in your garden or field.





Worms in the city

Earthworms play an important role in keeping soil fertile. They dig into the ground, allowing air and water to filter into it and improving the soil structure. As they move, they consume organic matter and transform it into plant nutrients.

With the help of worms, Arti and her family imitate nature at home by making **compost** out of their **organic food waste**. Their worms live in the worm composter they have installed in the cellar. The worm composter contains several bins. In the upper bin, which has holes cut into it, Arti throws vegetable and fruit peelings and tops, which are broken down by **bacteria**, **fungi** and worms to become compost. This is collected in the bin below. A new empty bin is placed on top to collect **new waste**. Arti leaves the earthworms time to move around through the small holes in the bins. At the end of the process, the consumption of the waste by the worms produces a very rich compost and liquid, both of which serve as super fertilizer for Arti to feed his mini-garden.

What is compost?

Compost is a nutrient-rich soil produced by breaking down green and organic waste like grass clippings, leaves, dead flowers, vegetable peelings and eggs.



CREAMERY



**Explore the pathways your food takes
and spot its transformation.**



Hi!

Follow me to find
about primary
processing of agricultural
products!



The creamery

Cheese making is a solution to avoid **wasting milk**, preserving its **nutritional value** in the long term. The transformation of milk into cheese is caused by micro-organisms and certain molecules that allow milk to coagulate. The milk changes from liquid to solid and is transformed into curds and whey. Depending on the milk used and the recipe chosen, the cheesemaker may cut, heat or stretch the curd. Before it is salted, the curd is put into a mould to be drained or pressed by the cheese maker. Finally, the cheese is left to mature for a period from a few days to several months, or even years, in damp cellars where it is turned over and brushed: this is **the ripening process**.

The Terrix City creamery produces sheep's cheese from the milk of animals raised in the orchard nearby. The cheesemaker makes hard and soft cheeses, such as Cantal or Brie de Brebis. There is something for every **taste!**

What is ripening?

Ripening is the final stage of cheese making, during which white, blue or orange moulds develop and act. These moulds form the rind of the cheese, give it its particular taste and make holes in Gruyère or Roquefort for example.

Become an eco-hero!

Make your own cheese from milk.
Follow the recipe!



Become an eco-hero!

All animals deserve respect, get to know them better. From shrimps to cows, they will no longer hold any secrets for you.



Butcher and fishmonger

Butchers and fishmongers are places where livestock, game, poultry and fish are first processed. These animals come from local fisheries and **livestock farms**. They are slaughtered in the best possible conditions before they reach the butchers and fishmongers who prepare them for **sale**. Meat is stored refrigerated in displays or on stalls. Consumers just have to choose which they want to buy.

In Terrix City, the fishmonger receives the catch of the day: carp, eels and perch from the nearby lake. Sheep farmers look after their animals with **respect for animal welfare** until their death. A mobile slaughterhouse that travels from farm to farm guarantees the origin of the meat for the butcher and for the Terrix. The butcher and the fishmonger, who are part of Terrix City's **sustainable food system**, pay close attention to where their products come from, their quality and **respect for the animals**.

What is welfare?

Animal welfare is defined by the World Organisation for Animal Health as a positive mental and physical state related to satisfying their needs. The conditions for welfare are the absence of hunger, thirst, fear, stress, pain and freedom to behave in their natural manner.

Processing plants

Processing plants turn fruits and vegetables into juice, compote, jam, soup or sorbet. To be processed, they are freshly harvested, washed, sorted and cut up as required. For instance, potatoes are sliced up to make chips. Plums and pears are stewed to become compotes. Pumpkin is transformed into soup when cooked with a little spice. The lemons are blended for use when making lemon sorbet. Portions of apricots, peaches or melons can simply be put in a protective bag. Finally, cooked, frozen and prepared fruits and vegetables are bottled or **packaged** appropriately and labelled before being distributed to **local grocery shops, supermarkets** and **restaurants**.

The Terrix City jam factory specialises in making fruit jelly: apple, blackberry and even dandelion flower jelly. These are easy to make thanks to the know-how of the master jam makers, which is passed on to any Terrix who are interested during the factory's open days.

What is packaging?

Packaging is a stage in processing in which products are put in packages for easy transport. In a sustainable food system, packaging made of recyclable or recycled cardboard, paper, plastic or glass is preferred.





Hi!

Follow me to find out about food preservation!

Become an eco-hero!

Do you really want to eat cherries in winter?
Visit a cannery to find them in syrup and bottled.



Heat preservation

Since the earliest days of agriculture more than 10,000 years ago, humans have used various methods of preserving meat and fish or fruits, vegetables and herbs after they have been harvested. **Smoking**, one of the first preservation methods invented, involves exposing meat or fish to smoke, which also gives it a flavour. From the 18th century, using higher temperatures made it possible to eliminate **bacteria** and germs that made foods go off. In the 19th century, **first sterilisation and then pasteurisation** allowed food to be preserved even longer. During pasteurisation, food is heated to a temperature of between 60 and 85°C, then immediately cooled and kept cold. For example, milk is pasteurised for sale in bottles or packs in **groceries** and **supermarkets**.

The Terrix City cannery has chosen the sterilisation technique to preserve fruit, vegetables, meat and fish from **local farms**. These products are bottled or put in airtight jars and then placed in the steriliser at a temperature above 100°C. This level of cooking extends **the use-by date**. In winter, the Terrix enjoy peaches and apricots in syrup bottled by the cannery.

What is the difference between pasteurisation and sterilisation?

Sterilisation involves heat above 100°C in order to destroy all micro-organisms, both bad and good. Pasteurisation only reduces their presence and is carried out at around 60 to 85°C. Both of these techniques extend the use-by date.



Cold preservation

Noticing that food kept better in winter than in summer, people created artificial cold to extend the **use-by date** of their food. Sub-zero temperatures block the development of bacteria that make food go bad. **Freezing** and deep-freezing permanently stop the development of micro-organisms. The water in the food is crystallised and **the bacteria** no longer germinate. For freezing, meat, fish, bread and ready meals are kept between 0 and -18°C . **Deep freezing**, a technique that uses temperatures below -18°C , reduces the temperature of the food sharply, thus ensuring better quality. **Refrigeration**, at temperatures between 0 and 5°C , only slows down the growth of micro-organisms and extends the life of foodstuffs for a few days.

Marah has a freezer at home. She keeps her ice creams and sorbets in it, but not just them! For instance, she lets her leftover quiches or pies cool and then puts them in **an airtight container** in the freezer to eat later.

What is hermetic packaging?

A hermetic package is a bag, tray or other container which is completely sealed and does not allow any air to pass through. Ideally, food should be stored in vacuum-sealed packaging, i.e. without any air inside.



Natural preservatives

While adding salt, sugar, oil or vinegar to food enhances its flavour, in larger quantities **these preservatives** also stop micro-organisms from growing. For example, meat and fish have been preserved in coarse salt since ancient times. This **salting** makes the water in the food unavailable and extends its shelf life. Fruit is candied or made into syrup by **gentle cooking** and the addition of a significant amount of sugar. Once the water has evaporated and the sugar content increased, it can be conserved for long periods. For vegetables and herbs, oil is the best insulator against air and water, depriving micro-organisms of the oxygen they need to grow. Dried aubergines, tomatoes and herbs, for example, keep very well in oil. Finally, gherkins, onions and legumes are preserved in vinegar whose acidity destroys **bacteria**.

In the kitchen of the city's **agricultural third place operation**, Marah and Arti are learning how to preserve figs. They are washed, cut in half, lightly sweetened and dried in the sun for two or three days. Marah, Arti and their friends turn them over regularly and put them in a dry place at night.

What are food preservatives?

Food preservatives are substances added to products to help them keep for longer. Natural preservatives like sugar, salt, oil, vinegar or smoke have been used since ancient times. Today, artificial food preservatives are also used.





Hi!

Follow me to
discover the journey
your food takes!

Become an eco-hero!

Pay attention to where food comes from, and choose local products or those which come from nearby when you can! You can find the origin of produce on the label on market stalls, at the greengrocer or the supermarket.



By plane and by boat



With the development of trade and **new preservation technologies**, food products travel vast distances. Cereals, fruits, vegetables, meat, fish and fresh flowers cross the oceans and are flown from one continent to another. Planes, which are very fast, are used for products with a limited lifespan like exotic fruits, which may travel from Mexico to France for example. Refrigerated freighters carry much larger weights than planes and are also less polluting. Oysters grown on the French coast are sailed across the oceans, and can end up in Chinese **grocery shops!**

On the shelves of Terrix Market, bananas and pineapples, grown abroad, are transported by boat. However, the Terrix are careful about **food miles** and prefer local and seasonal produce.

What does the concept of "food miles" mean?

Food miles refer to the distance that a food has travelled. The number of food miles is a measure of the environmental impact.

Road and rail

Within a continent or within a country, road and rail are the preferred means of transport. With refrigerated compartments, which keep food chilled, trucks and trains provide efficient transport. The various forms of refrigeration make it possible to maintain **the perfect temperature to preserve** food products. They can bring the thermometer down to -20°C .

A refrigerated truck comes to pick up the strawberries harvested in the **greenhouses** and then packaged in the Terrix City processing plant. All day long the truck travels dozens of kilometres to serve the Terrix in the city's **shops** as well as those in neighbouring towns. Thanks to road transport, the Terrix receive fresh products regularly!

What is a refrigerated truck?

A refrigerated truck is equipped with a mobile refrigeration system. Thanks to this system, the transporters guarantee an ideal temperature for storing perishable goods such as fruits, vegetables, meat and cheese.

Become an eco-hero!

You too can apply the principles of cooperation between the different trades of Terrix City: with your family and friends, try using carpooling for family shopping.



Become an eco-hero!

Think about going to pick up your fresh bread from the baker by bike or on foot.

Soft mobility



Soft mobility refers to means of travel that have a low negative impact on the environment. Bicycles, scooters, electric transport and rollerblading are all developing and are good examples of this. In a **sustainable food system**, such soft mobility is essential and ensures fast, local and environmentally friendly supplies. In the cities and in the countryside, street vending is growing. It is also a great way of bringing people together by offering a chance to meet up and chat.

In Terrix City, **the cargo trike** travels between the farm, **the butcher** and the **orchard** to collect food and bring it to the city's cannery or **grocery shop**. Terrix City's cargo trike is fitted with a **refrigerator** so that food is as fresh as possible when it is sold. When they see the trike pass by, Marah and Arti never miss a chance to say hello to Poly.





Find out all the places you can buy your food

Farm

Terrix Market

CSA

Follow me to discover
traditional shops!



General stores

General stores are retail outlets where consumers buy fruits, vegetables and meat, but also non-food products such as household goods, clothing, school supplies and DIY tools. Supermarkets, hypermarkets and click-and-collect outlets are general stores. **Hypermarkets** are bigger than **supermarkets**, and **click-and-collect outlets** deposit the shopping you **order online** in your car boot. To move closer to consumers, these shops have developed on a smaller scale, both in the city and in the countryside, guaranteeing supplies as near as possible to consumers, from the urban hypercentres in major cities to the smallest communities.

At Terrix Market, Arti, Marah and their neighbours can find **locally produced** food and produce from foreign countries, including exotic fruits delivered by **energy-efficient transport**. Here, the people of Terrix are sure to find a wide range of **environmentally friendly products**.

What is click and collect?

Click and collect is a time-saving service provided to customers for their online orders. The order is prepared by staff in the store for the time slot chosen by the customer. The shopping is then handed over to the customer, or placed in the boot of the car.



Greengrocers

Greengrocers are retail shops selling **fresh or prepared** fruits, vegetables, herbs and spices. Greengrocers play an active role in the life of the neighbourhood as they are a place to meet and chat, and also to promote local products. Greengrocers, selling seasonal produce, always have good advice about how to use the products together and create **new recipes**. In small communities, they may also offer bread, post office services or newspapers. These places energise local life and strengthen social links.

In a bid to make life easier for everyone, the Terrix City greengrocer offers an extra **home delivery service** for people with reduced mobility. He goes in his electric van straight to his customers, some of whom have become his friends because he offers fresh, local, quality produce, gives them good advice and helps them whenever he can.

Become an eco-hero!

Encourage your friends and family to volunteer at a social grocery and help people in need to obtain quality products at a lower cost.



What is home delivery?

Home delivery is a service offered by specialist companies that collect orders, transport them and then deliver them to the home.



Pop-up shops

Pop-up shops are temporary shops that are set up, legally, for a few weeks or months. They make use of empty premises before they are given a new purpose. Stands, shops or temporary grocery stores are an opportunity for producers and craftsmen to test their products with customers. They organise tastings or workshops, and excite the curiosity of customers. These unusual outlets feature new or seasonal products.

A pop-up ice cream stall appeared in Terrix City to the delight of children and adults alike. The ice creams are made from cow's and sheep's milk from **nearby farms**. At the end of the summer, the temporary ice cream stall will give way to a **soup kitchen**. Any trader can rent this stand, share their products with the Terrix people and save money.

What does temporary mean?

Temporary here refers to a very short period, anything from 24 hours to a few days.

Become an eco-hero!

Help identify any vacant areas, wastelands and premises in your town or community and report them to the local authority.



Follow me to discover
the local shops!





Local markets

In the local markets, you will find all kinds of vendors, from the pot seller, to the clothes seller, to the gadget seller, to the fresh food seller. **Bee-keepers, farmers, market gardeners, butchers and cheese makers** all sell their products at their stalls. Fruits, vegetables, meat, fish, oil, cheeses, and cooked dishes are usually local and seasonal. Passers-by are invited to taste them in a festive atmosphere, amid a thousand and one appetising smells and colours.

Wednesdays and Saturdays are market days, when the people of Terrix, eager to meet their producers and listen to their valuable advice, do their shopping with their families. Thanks to Pansy's know-how and her little secrets, her ratatouille is unequalled, to the **great delight** of the Terrix. Shopping at the market becomes a sociable occasion, with tastings and meals served on the spot.

What is the role of a market organiser?

The market organiser welcome the traders and allocates them a stall in the market. He ensures good relations and sometimes promotes the market.

The CSA



A CSA is a **community supported agriculture**. Small-scale farming promotes **the independence** of farmers by encouraging a direct link with customers close to the farm. Together, food system players develop a real solidarity and reduce both the distances and the number of middlemen between the field and the plate. Customers make a commitment to the farmers by subscribing, ensuring them a fair and regular income so that they can keep their farms going and make a living from their work. The production methods of CSA farmers generally respect biodiversity, **the diversity of locally grown crops** and environmental protection. These commitments, which give meaning to the farming profession, restore the confidence of subscribers who visit the farms.

Marah and Arti's families are registered in a CSA network, so the children meet once a week by the cherry tree to **collect the baskets**. They contain eggs, yoghurts or meat from local production.

What does the diversity of locally grown crops mean?

Crop diversity refers to the alternation between different varieties of the same crop types. For example, there are different varieties of potatoes, some suitable for steaming, some for making chips and some for baking. Growing different varieties and species guarantees sustainable food all year round.

Become an eco-hero!

If your family isn't subscriber to a CSA, you can look online to find out which CSA are close to your home.



Become an eco-hero!

To fight against food waste your parents can use various apps on their phones that list products and dishes that can be saved near you.

In particular, the FoodE app!

Going digital to go local

The internet makes it possible to do your shopping from your computer or phone. Consumers order food remotely in order to enjoy a good meal anywhere. This gives them access to high quality local fruits, vegetables, meat and fish while supporting market gardeners, fishermen and farmers who are committed to the planet and to its people. Deliveries can use **soft mobility, such as bicycles, cargo trikes, rollerblades or electric vehicles.**

Marah's parents work at the plant-based leather works and the town's recycling plant. At lunchtime, they **use their smartphones to order** two takeaways from Batavia and have a picnic by the lake. For the family dinner, they use the **click and collect in Terrix Market** to get a basket with the original recipe for the main course and the ingredients needed to make it.



What is e-commerce?

Online trade or e-commerce means buying and selling products or services via a computer network.

Follow me to learn
how to fill your own
basket yourself!



Become an eco-hero!

Go to a U-pick farm near your home and fill your own basket yourself.



Picking at the farm

Pick-your-own farms also called U-pick farms are harvesting sites where consumers are invited to pick the fruits and vegetables they want themselves. Farmers open the gates of their **farms**, and let their customers pick tomatoes, raspberries, peppers and choose for themselves how many carrots, potatoes or oranges they want to take home. Picking your own food means the distance from field to plate is minimal.

Once a week, Arti and his family go to the farm near **Terrix Market**. Here they pick turnips, chard or cauliflower. And then, when summer comes, they pick strawberries. They use what they pick to make **crumbles, soups and vegetable gratins**.

How does pick-your-own work?

Pick-your-own is a form of consumption based on individual autonomy. Producers, who allow consumers to harvest produce from their fields, may provide tools or a wheelbarrow, for example. The producer decides which products can be picked and which cannot, as they move through the seasons.

Buying unpackaged

To fight **food waste**, the Terrix choose to go to shops that **sell food loose and unpackaged**. By buying unpackaged products, they can choose how much food they want to consume. The products are presented without packaging or in dispensers so that everyone can easily help themselves. This form of supply encourages people to manage their and their household's needs individually. Terrix are also invited to bring their own containers to collect their fruits and vegetables, cereals and starchy foods, for example.

Choosing to sell unpackaged reduces **waste** because food is bought using recycled paper bags or reusable containers. In Terrix City, the residents have all taken to recycling **glass bottles** for fresh juice made at the cannery and sold unpackaged.

What does selling unpackaged mean?

It means selling products loose without packaging. Cereals are not sold in boxes, for example, but from self-service dispensers.



Become an eco-hero!

You too can barter: fruits for vegetables, vegetables for seeds, seeds for herbs!



Food barter

The growth of **urban vegetable gardens** sometimes results in a surplus of vegetables, fruits and herbs that cannot be stored. In order to avoid **throwing away the surplus** when consumers cannot process the food into ready-made meals, there is a solution: **barter**. In bartering, consumers swap food they do not consume themselves with each other. This swap is often carried out in person, for example at neighbourhood meetings.

This method, which is highly developed in Terrix City, has allowed Marah to get some of her neighbour's apricots in exchange for a tray of cherry tomatoes. Meanwhile, Arti is eagerly waiting to swap some courgettes for melons. Then, in winter some Terrix swap hot chestnuts for pumpkins. In addition to **diversifying the food** supply, barter strengthens the ties between the Terrix, who are delighted to discover new products and meet new people.

Where does the word barter come from?

The word barter comes from an old french verb barater, which meant to cheat. It means to exchange one thing for another. Before money existed, people traded with each other through barter.



Find out where your meals are prepared



Follow me and discover
a restaurant kitchen!

Jobs in the kitchen



Several people work as a team in a restaurant kitchen. Under the direction of a chef, team members divide up the tasks: washing up, cutting up vegetables, preparing sauces, making desserts, cooking the dishes. Together the cooks, **the commis** and the chef create **recipes to satisfy the customers.**

From behind the ovens at Batavia's restaurant, the cooks work to prepare all the dishes. Batavia chooses the day's menu depending on the produce provided by **local producers**. In the school canteen, there is also a chef who cooks for all the children at the school. To vary the pleasures, the chef never uses the same produce twice but takes care to **balance the dishes**. The Terrix residents enjoy fresh local produce and discover **sustainable** recipes. Today, Pansy's celeriac remoulade, spinach and trout quiche, and blackberry yoghurt are on the menu.

What is a commis chef?

A commis chef is a kitchen apprentice. He carries out simple tasks and helps the chef to prepare the food: cleaning, chopping, garnishing.

Become an eco-hero!

Look out for restaurants that work together with producers. That way you can support local agriculture while tasting great dishes.



Become an eco-hero!

Go hunting for the different symbols on restaurant menus, find out what they mean and spread awareness among your friends and family.

Learn how to read a menu

Restaurant menus hide many secrets, and to recognise the clues you have to learn to decode them. For example, some catering places indicate that they use products from **organic farming** with the label "Bio" Others use the "home-made" logo to indicate that **the chef and his team** have prepared their dishes using only unprocessed products. Finally, the "green key" **label** is awarded to catering establishments with good environmental practices. They manage their **waste**, **water**, and energy carefully, and use **seasonal produce**.

During an educational activity at Terrix City's **third place** operation the pupils learned to read the different logos shown on the menus and were then able to explain them to their friends and families. So they know that in Batavia's restaurant, everything is home-made from starters to desserts.

What are the labels for?

The labels are quality indicators symbolised by a logo. They are used to inform tell consumers where the produce comes from (**PGI, PDO**) or their quality, in terms of taste (home made, Red Label), social impact (fair trade) and the environment (**Bio, Green key**).



Restaurants and sustainability

Catering establishments generate **waste** and **food wastage**. To limit the harmful impact on the environment, restaurants and canteens adopt sustainable practices, from kitchen to waste, including energy management. For example, they limit wastage by adapting portion sizes to the hunger of the consumers. Their water consumption is reduced by rinsing fruits and vegetables in a basin, so as to avoid using running water.

To reduce food wastage, Terrix inhabitants don't hesitate to ask for a **doggy bag** to take home food they have not eaten in the restaurant. A "community fridge" has also been set up in front of the restaurant where unordered dishes can be placed. Everyone is free to help themselves. The important thing is to throw nothing away.

What is a doggy bag?

A doggy bag is a container in which restaurant customers can take home their leftovers. If there's some of your toasted sandwich left, it can be packed up to be eaten the next day.

Become an eco-hero!

Ask for a doggy bag when you don't clear your plate.





Discover the alternatives to fast food!

Become an eco-hero!

When you go out for a walk or to school, get into the habit of taking your drinking bottle and cutlery.



Eco-responsible food trucks



Both in the town and out in the countryside, a food truck takes to the road looking for the right place to serve takeaway dishes. The food trucks are restaurant trucks, fitted out with a kitchen, which travel to find customers. Some have decided to offer **eco-responsible** catering, working with local, seasonal produce, using **biodegradable** trays in wood or maize starch and bamboo cutlery.

Several times a month, a food truck sets up by the lake in Terrix City. The chef offers Italian or Japanese rice balls, filled with meat or vegetables. They are packaged using dried seaweed.

What is a biodegradable packaging?

Packaging is biodegradable if it can be broken down by living organisms in the right environment. So there is no point in throwing biodegradable packaging into an ordinary litter bin.

Become an eco-hero!

Take time to enjoy your meals, like a real eco-hero! This helps your digestion and you can play at guessing the ingredients and the flavours in your dish.

Slow food for all!

The slow food movement was launched in the 1980s by Carlo Petrini, as opposed to fast food restaurants. The aim of this movement is to offer good, clean and fair meals for everyone. Good because they are tasty and **balanced**, clean because they are made in a way that protects the environment and **animal welfare** and finally fair because they protect the people who produce, prepare and distribute them.

Batavia's restaurant, the food truck and **the traders at the local market** all support the slow food movement. They work together to create sustainable, varied meals, which are served during events in the town. For example, they use carrot pulp to make cookies, the tops are used to make pesto and the juice can be used in a vinaigrette.

What is "slow food"?

Slow food is a term used to describe a movement that fights for a sustainable food system. It emphasises the importance of taking the time to produce, cook and eat well.



Community kitchens

To fight **food insecurity**, volunteers get together to prepare meals for people in need. The recipe for these initiatives is simple: volunteers, surplus food and a kitchen.

Together, they get to work concocting dishes using unsold food from restaurants before distributing them. Today, this initiative is supported by well-known chefs and amateur cooks alike.

From time to time, Batavia welcomes schoolchildren and their families into her kitchens to prepare dishes for people in Terrix. At the last event, they cooked an anti-waste soup together: carrot and turnip peelings, the green part of leeks, a bunch of parsley, a touch of cream and some smoked bacon. Then they distributed the soup in **biodegradable bowls** in front of the restaurant.

What is food insecurity?

A person is suffering from food insecurity when they do not have regular access to healthy nutritious food.

Become an eco-hero!

Join a community kitchen near you or donate food to charities.





Come and observe the contents of a balanced plate!



Diets

The term 'diet' refers to the types of foodstuff eaten by humans or animals. There are different diets, for example carnivores eat mainly meat while **herbivorous animals** eat grass. Humans are omnivores, they eat fruits, vegetables, nuts, fish, eggs and meat. However, some people choose not to eat meat or fish.

In Terrix City, the residents alternate between menus with and without meat. **The chef** at the school canteen offers original dishes that the pupils enjoy, such as vegetarian parcels. Carrots and mushrooms are pan-fried with a little oil and garlic. Then he adds a little cheese. The mixture is wrapped in thin pastry and cooked in the oven for ten minutes. Marah and Arti enjoy this starter and would have liked seconds.

What does frugivore mean?

A frugivore animal is one that only eats fruits.
Many kinds of monkeys and birds are frugivores.

Nutritional value



To grow, develop and reproduce properly, a living organism needs healthy food every day. Humans need food containing energy (calories) and essential elements such as **protein, sugars, fats and vitamins**, in well-defined amounts according to age and size. These calories and elements contained in food are referred to as the **nutritional value**.

To learn how to eat well at the **shared garden** in Terrix City, Marah, Arti and their friends invent balanced recipes. The winner with the most appetising recipe is appointed chef. Then, with the help of their family and friends, the children get **into the kitchen** to prepare and share the dish.

Become an eco-hero!

Grow some parsley on your windowsill and add a few leaves to a prepared dish.



What is a food intolerance?

A food intolerance is a digestive reaction caused by a foodstuff. Being intolerant to a food means being unable to digest it properly.

Flavours

Taste is one of the five senses and is experienced by the tongue. The tongue is made up of millions of tiny cells that perceive the flavours of foods, such as salty, sweet, bitter, sour and **umami**.

In class, the teacher at the school in Terrix carries out a flavour experiment with the pupils. They have to guess the flavours while wearing a blindfold. On Tuesday, the tasting offered lemon juice, grenadine syrup and salt water. Marah and Arti recognised the acidity of the lemon and the sugar in the syrup, but they confused salt and bitter flavours. Tasting isn't easy when you're wearing a blindfold!

What does umami mean?

Umami is a new term to describe a savoury taste. This taste is due to the presence of a particular element: glutamate. It can be found in dried prawns, soy sauce or parmesan.





**Follow the trail
of your waste**



Discover
the different waste
collection points!

Kitchen waste

Cultivating your garden, pruning trees, cooking and eating fruits, vegetables or eggs all produces a lot of waste. This is known as green or organic waste. Once **composted** this waste can be converted into a new **growing medium** for plants and vegetables. There are several solutions for recycling this waste: **making your own compost** at home, or taking your waste to the collective **composter** below each building, or at the neighbourhood **shared garden**.

In Terrix City, the residents have a composter below each building. Marah and Arti and their families regularly help to maintain the compost by alternating a layer of organic waste with brown waste such as tree leaves, cardboard or straw. They ensure that the mixture is moist and well aerated.

What is the compost used for?

After several months of maturation, the compost is used to feed the plants. The compost is a natural fertiliser.

Become an eco-hero!

Follow the trail of the kitchen waste collector to discover a giant compost pile.



Become an eco-hero!

You can sort the tops of plastic bottle and give them to a local association. And don't forget to sort your waste!



Plastic, glass and metal waste

Food in shops is very often packaged. Drinks come in plastic or glass bottles or in cans, milk in cartons and yoghurts in glass or plastic pots. Metal cans for ready meals. This packaging can be re-used if it is processed in a specialist plant. For this, you just have to put each type of waste in the right bin so that the refuse collectors can pick it up.

As part of their **waste sorting efforts**, Marah and Arti collect plastic bottle tops. Between them they've collected more than a hundred. They give them to an association that recycles them into skateboards.



Who collects the waste sorting bins?

The refuse collectors. They put the waste in the tipper truck and take it to the treatment plant. Fungi is an expert refuse collector, she knows all the different types of waste and never fails to say hello to the locals when she makes her rounds.

Business waste

There are all kinds of waste in the city, dropped off at the waste collection centre: for example branches and pieces of wood are used to create stakes for tomato plants or to create a vegetable patch. Building waste, such as chunks of concrete, clay or brick can be used as a **substrate** for cultivating plants in containers.

Furniture in the shared gardens in Terrix City was partly made from objects recovered at the waste collection centre. The people of Terrix have used pallets to make raised plant containers suitable for older people and people with disabilities. The pieces of brick are used to build paths on which people can walk in all weathers.

What is the waste collection centre?

The centre is a place which collects and processes waste that does not go in the household bins. This waste is sorted by type: paper, glass, wood, electrical goods or toxic materials such as paint or varnish.





Discover the places where
your waste is recycled!

Become an eco-hero!

Join Marah and Arti on a trip to the sorting centre: [Visit a sorting centre.](#)



Sorting plants

Sorting is an essential stage in waste management and is often automated. The waste all arrives together on a conveyor belt and is sorted by size, shape and material. Plastic, cardboard, paper or cans are separated out. For example, big magnets attracts steel items, while light waste like the paper takes another path. Each category is then **baled** for dispatch to a specialist plant and another life.

Marah and Arti went with their school to the Terrix City. sorting plant. There, they learned that waste that is too small, under 7 centimetres, cannot be sorted and recycled. They realised that waste must be properly sorted at home to ensure optimal recycling.

What does baling waste mean?

Baling waste means compressing and wrapping the sorted waste for storage. The waste bales are round or rectangular.

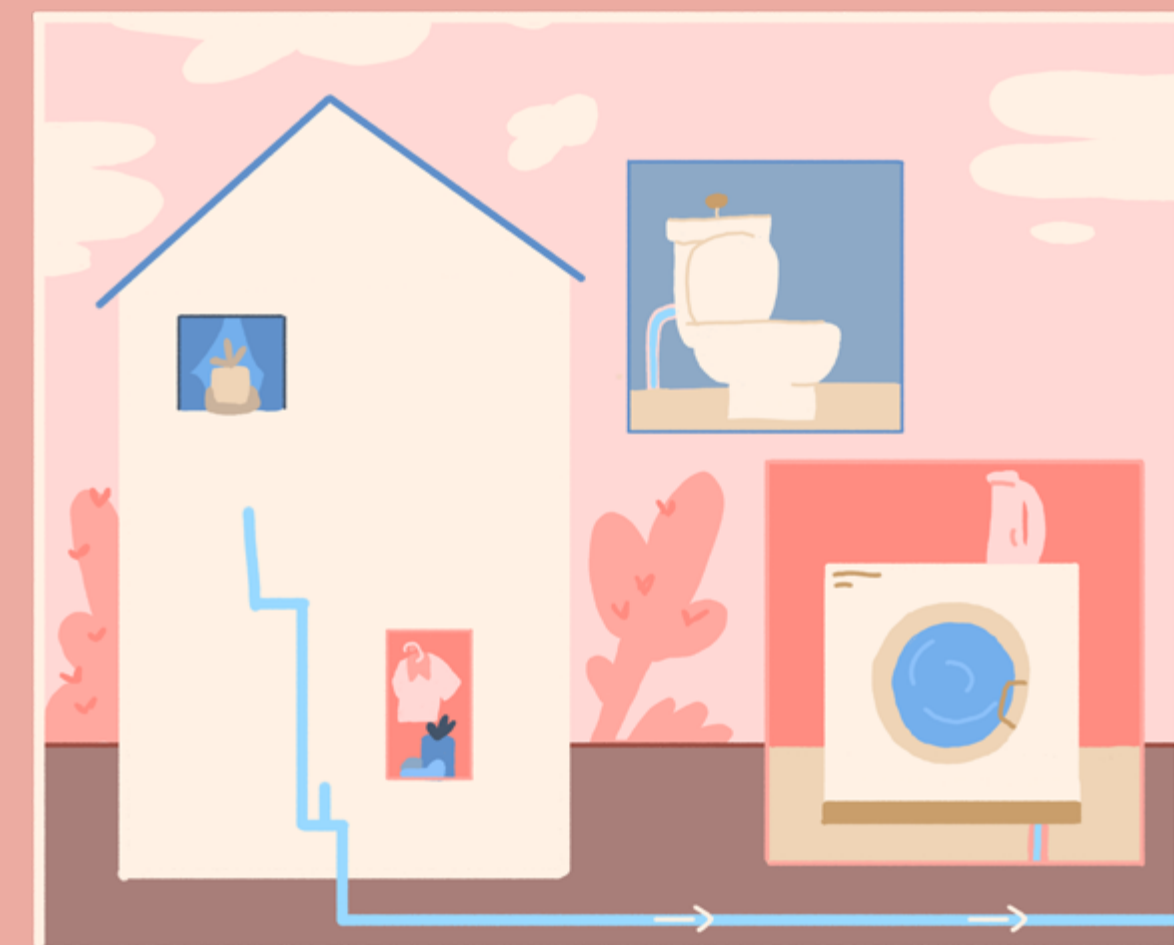
Water treatment plant

The water used to wash vegetables, in the shower, in the toilet or in the washing machine is discharged from the house into the sewer. This is the waste water, which is sent to the water treatment plant. In the plant, the water is filtered through increasingly fine screens to remove large and small waste. With the help of bacteria, the water is then cleaned and purified and returned to nature without polluting.

The technicians at the Terrix City water treatment plant are essential to keeping the city clean, just like the refuse collectors. Some people living in Terrix City have taken advantage of **vocational integration schemes** to train for environmental jobs and have become technicians at the water treatment plant. They thus help keep our natural resources healthy.

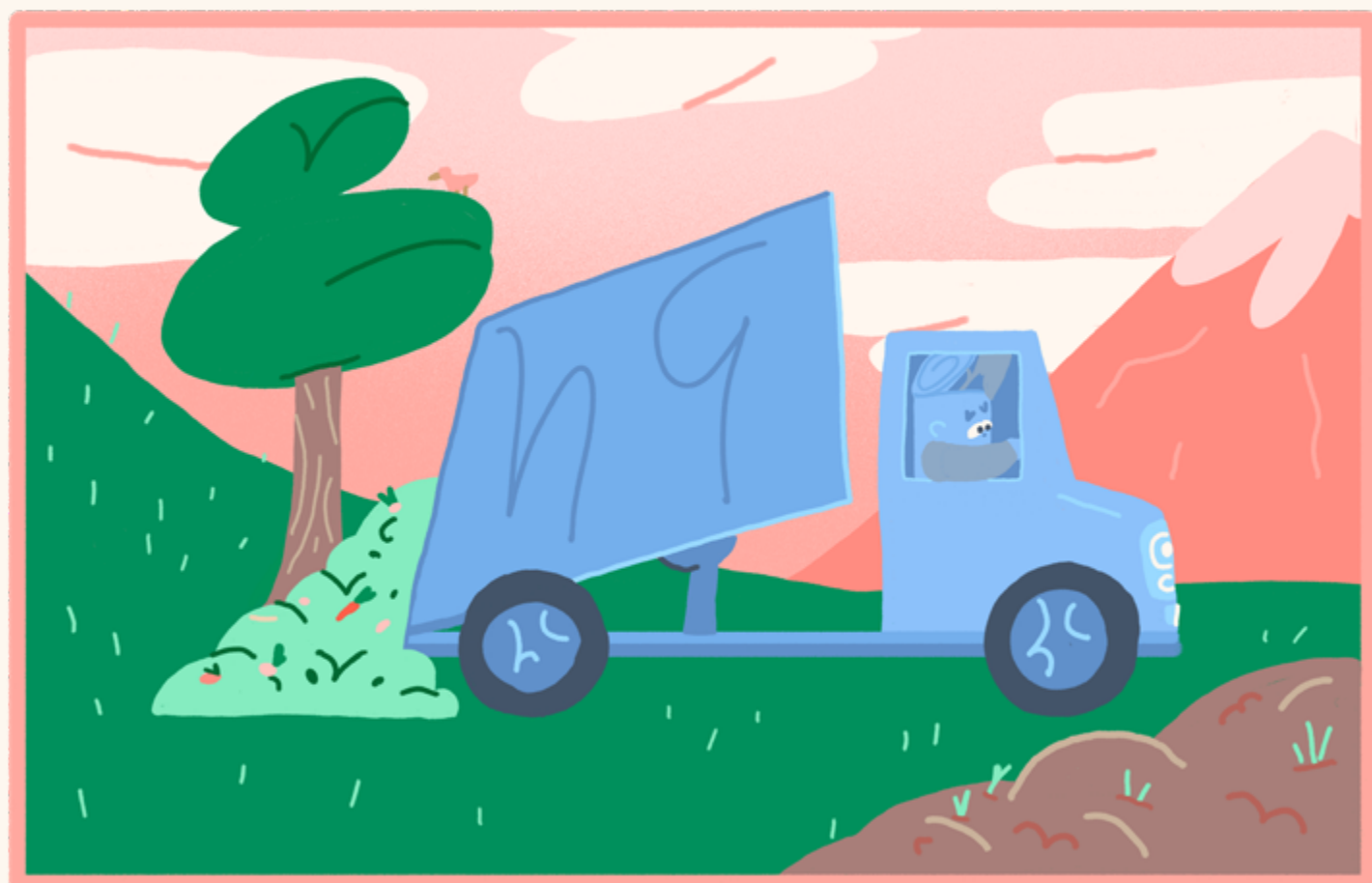
Become an eco-hero!

A trio to the Mississippi river:
Learn about the water cycle.



What is vocational integration?

Vocational integration is a training pathway that allows a person to decide on a project, find a job and become part of a team.



The composting hub

A composting hub is a place where organic waste is collected and then converted into **compost**. During this process, the waste is crushed to help break it down. Once crushed, the waste is laid out in **windrows** in the open air so it can be broken down. During this stage, bacteria and fungi are activated to create the compost. All this activity sends the thermometer climbing!

Located a few miles from Terrix City, the composting hub that collects the city's waste opens its doors to residents. There, the people of Terrix question the technicians, local farmers and organisers in order to understand the composting cycle.

What are windrows?

Windrows are long rows of compost, cut grass or hay. You may see them in the fields after a harvester has passed through, for example.



Find out how organic waste is reclaimed!

Become an eco-hero!

Consider fertilising your kitchen garden with something like horse manure.



Manure

In **livestock farming** the animals contribute to making the soil fertile in their own way. This is because the animals' **excrement** mixes with the straw in their enclosures to form manure. This combination creates a natural fertiliser that is ideal for feeding the soil in the right dosage.

In Terrix City, a business is responsible for regularly collecting the manure that is not used in the city's farms. After collection, the manure is saved and packaged. Residents can come and collect bags of manure to fertilise their kitchen gardens. There's nothing better than horse manure for tomatoes and squashes!

How can excrement become a natural fertilizer for the soil?

Animal excrement is rich in nutrients that are good for the soil and plants. When they break down into simpler molecules like water, they become fertiliser.



Methanisation

The recovery of agricultural waste is also part of the sustainable food system. Methanisation breaks down organic waste. During the entire decomposition process, the waste is in an environment free of oxygen. This waste includes plants, algae, food waste, manure or even **industrial waste** such as leftovers from bakeries or sugar production. The methanisation process produces a natural gas, methane, which is a biogas.

A methanisation plant was set up near Terrix City. **Pansy**, the other **farmers** and even **the fishmonger** contribute their waste. Thanks to them, the gas created is used to heat the houses in the city and to fuel their kitchens. From plate to field, the waste ends up being recycled!

What is waste reclamation?

Waste reclamation refers to a set of techniques used to transform waste into a new product, or into energy.

Become an eco-hero!

Not everyone can take their waste to the composter or methaniser. The best solution is to reduce your waste first and foremost.



Become an eco-hero!

Dye your own t-shirt!



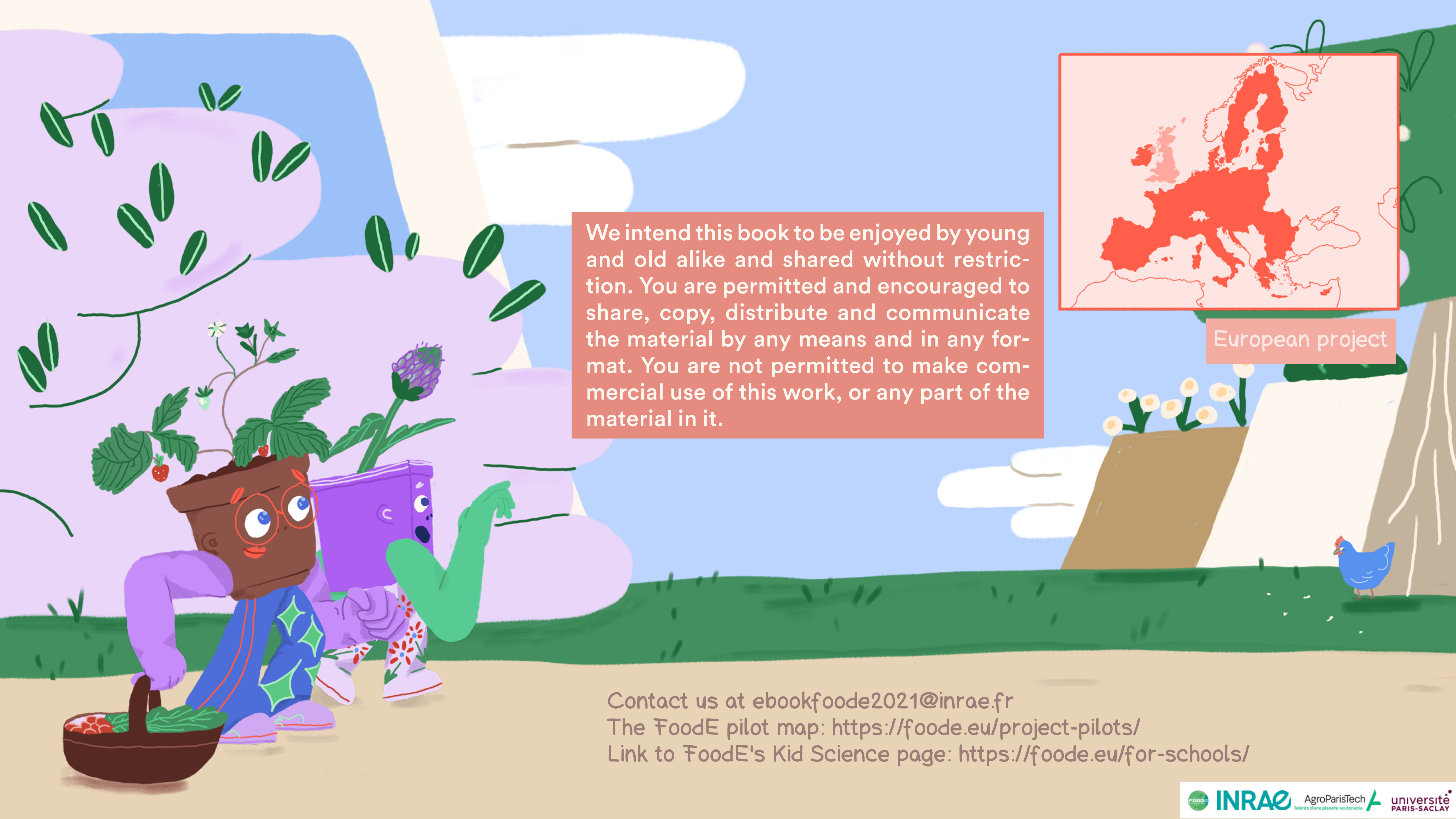
Recycled clothing

Did you know that it takes almost 10,000 litres of water to make a pair of jeans? To fight against this **waste** of resources, fashion companies are inventing sustainable solutions. Today, clothes are being made from recycled **food waste** such as grapes, pineapples and oranges. Using these fruits, they are creating sustainable textiles. In addition, many foods are used to dye clothes: carrots to dye them orange, the skin of an avocado for a beautiful pink or a little cocoa powder for brown.

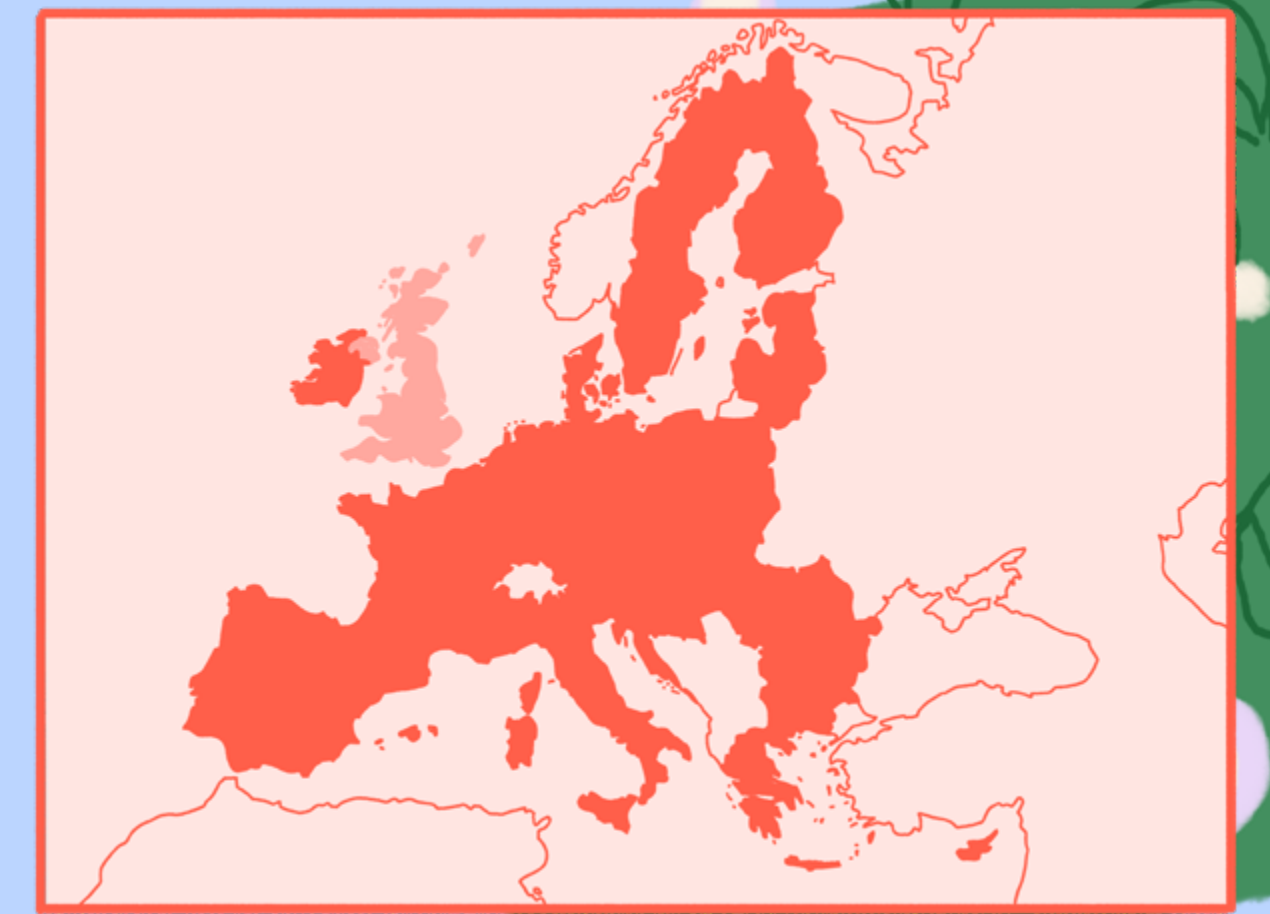
People in Terrix have chosen to recycle the wool of sheep raised for their meat and milk. They use the wool to make jackets, jumpers, hats and socks. Marah and Arti are learning to knit a woollen scarf to keep *Pansy* warm when she is working outdoors.

What is polyester?

Polyester is a material that is not found in nature. It is made from oil. To limit pollution, clothes can be made from recycled polyester, like plastic bottles recovered from the seas.



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European project

Contact us at ebookfoode2021@inrae.fr
The FoodE pilot map: <https://foode.eu/project-pilots/>
Link to FoodE's Kid Science page: <https://foode.eu/for-schools/>

Appendix

Terrix City

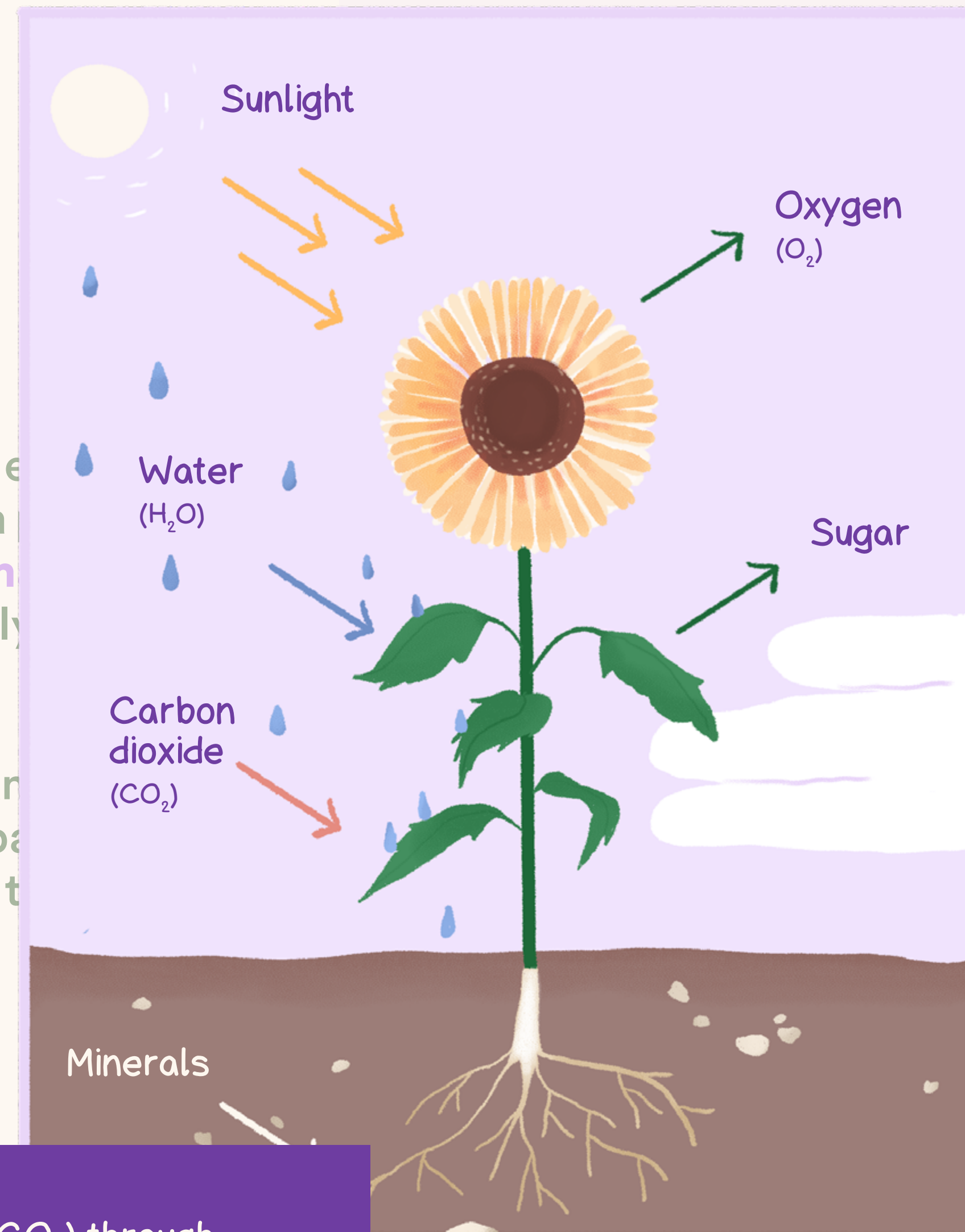
- Unlock the secrets of how your food is produced
- Explore the pathways your food takes and spot its transformation
- Find out all the places you buy your food
- Find out where your meals are prepared
- Follow the trail of your waste



Cereal growing

Whether on the plate, in the kitchen or on the table, cereals are everywhere. Bread, pasta and biscuits are made from cereals. A cereal is a plant grown for its seeds, which can be used to feed humans and animals. Cereals are usually grown in large fields in the open. The most heavily grown are rice, wheat and maize.

In Terrix City, spelt, sorghum, amaranth and oats, lesser-known cereals, are making a comeback, particularly for use in vegetable-based products. Cereals, like other plants, grow through photosynthesis and the energy that Violet provides.



eco-hero!

open to the public
looks like before it
corn or wheat into
a.

What is photosynthesis?

It is a biological process where plants and trees absorb carbon dioxide (CO₂) through their leaves and water through their roots.

They convert these into sugar using the energy of the sun and release the oxygen which they do not need.

So thanks to photosynthesis, plants are able to feed themselves.

Click on the page number to go back where you came from!



Glossary

Organic farming: This is a production method that calls for the use of natural pesticides in order to preserve biodiversity and the natural qualities of the soil, water and air ([p.59](#))

Rural agriculture: Agriculture is how humans transform their environment in order to produce plants and animals. It can be on open land or indoors, in the soil or off the ground. Rural agriculture is simply farming in the countryside. There is generally more space than in the city, which allows for larger farms and more animals.

Urban and peri-urban agriculture: Urban and peri-urban agriculture refers to farming in and around cities. It provides fresh food for people, creates jobs, recycles urban waste and makes cities more resilient to climate change.

Urban and peri-urban agriculture happens at home, on balconies, in gardens, on shared farms.

Agroecology: Agroecology is a kind of farming that takes account of how nature works. It means, for example, taking care of the quality of the soil so that it is always fertile, protecting biodiversity and using renewable energy sources like the sun, air and water, but using as few synthetic pesticides as possible. This way, farmers who follow the principles of agroecology work to maintain a biological balance ([p.16](#), [p.20](#))

Farmer autonomy: the ability of farmers to make decisions for themselves. It is up to them what they buy, what they plant and what they sell, for example ([p.50](#))

Click on the page number to go back where you came from!



Glossary

Bacteria: Tiny living organisms — micro-organisms — which feed on organic matter (material produced by living beings) and decompose it. There are millions of bacteria on Earth and they are essential to ecosystems ([p.15](#), [p.27](#), [p.36](#), [p.37](#), [p.38](#))

Biodegradable: can be broken down by living organisms without polluting nature. Plastic bottles are not biodegradable but fruits and vegetables are ([p.64](#))

Short food supply chain: farmers selling food directly to consumers, with a limited number of middlemen [European Commission, 2013].

Preservative: a substance added to food to keep it from going bad. Thanks to preservatives, food can be kept for longer before you eat it.

Food sustainability or sustainable food: food that has a low impact on the environment and provides safe and healthy nutrition for current and future generations ([p.58](#))

Conservation grazing: using animals to maintain green spaces and natural environments. By raising animals which graze on the grass, mowing becomes environmentally friendly ([p.28](#))

Ecosystem: a group of living beings that evolve and interact in an environment. A city is a concrete ecosystem, which is why it we need to green it ([p. 27](#))

Click on the page number to go back where you came from!



Glossary

Food wastage: losing or throwing away food which should have been eaten ([p.54](#), [p.60](#), [p.81](#))

Hydroponics: a way of growing crops without soil. For example, plants are grown in sand and have a controlled supply of water and nutrients ([p.22](#), [p.23](#))

Social mix: mixing people of different origins, genders and ages. These people live together in the same space ([p.20](#))

Permaculture: a sustainable way of growing crops that mimics the transformation and relationships found in nature, while producing food, materials and energy to meet local needs [Holmgren, 2002]. Permaculture farming is about taking care of nature and yourself, because permaculture connects all elements of nature, including humans.

Pesticides: chemicals used to destroy pests. There are natural chemical pesticides of animal, plant or mineral origin and synthetic chemical pesticides that are created by humans.

Food resilience: the ability of a food system to adapt to disruption and overcome crises so that it can keep producing and distributing healthy and balanced food for everybody. ([p.26](#), [p.33](#))

True or False

1. TRUE or FALSE: bamboo is a cereal. FALSE
Bamboo is not a cereal but it belongs to the same family as wheat: the grasses.

2. TRUE or FALSE: All pests are insects. FALSE
A pest is an insect or animal that is considered dangerous for some kind of agricultural product. Not all insects are pests!

3. TRUE or FALSE: Legumes are used to make flour. TRUE
Pulses are processed into flour to make noodles, for instance. It is perfectly possible to eat split pea noodles!

4. TRUE or FALSE: Trees communicate with each other. TRUE
Trees are able to communicate through their root systems.

5. TRUE or FALSE: Cows drink milk. FALSE
Like all other ruminants, cows drink water.

6. TRUE or FALSE: Agricultural third places operations help support equality. TRUE
Agricultural third places supports food sovereignty — the right to food which is nutritious and in adequate quantities, and access to the means of production.

7. TRUE or FALSE: The first collective garden dates from 2013. FALSE
It dates from 1973! Liz Christy and her friends created the first collective garden in the history of New York. She wanted to green the city and create common living spaces after a severe economic crisis. This garden still exists today and is known as the Liz Christy Community Garden.

Click on the True or False again to return to the previous page



8. TRUE or FALSE: Floriculture is part of agriculture. TRUE Floriculture is growing flowers in the ground or in pots, in greenhouses or in fields, for leisure or for business.

9. TRUE OR FALSE: Borage is a plant that tastes like an oyster. TRUE. Borage produces a small blue flower which is widely used in cooking for its iodine taste. It also keeps slugs away from the vegetables.

10. TRUE or FALSE: Growing plants on the outside of the house can lower the temperature. TRUE As well as creating shade, plants contain water that evaporates through the leaves, cooling the atmosphere. This is called evapotranspiration.

11. TRUE or FALSE: The bees in a hive visit about 10 million flowers to produce 1 kilogram of a honey. TRUE This represents almost 10,000 hours of work.

Click on the True or False again to return to the previous page



12. TRUE or FALSE: Hard-boiled eggs are the most nutritious. FALSE It is best to eat a poached or soft-boiled egg, as this method of cooking preserves the nutritional qualities: neither overcooked nor undercooked, the proteins are better digested.

13. TRUE or FALSE: Fish raised in aquaponics can be eaten. TRUE All you need to do is choose a species that is suitable for rearing in an aquaponics system. You can also raise prawns in aquaponics.

14. TRUE or FALSE: All ruminants are herbivores. TRUE They are called ruminants because they ruminate, which means that they swallow their food once and then regurgitate it to chew it a second time.

15. TRUE or FALSE: There is only one species of earthworm. FALSE, there are about 5000 species of earthworms. By the way, the earthworms you may find in your garden are not the same as the worms used in the worm composter.

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True or False

- 1.** TRUE or FALSE: Bacteria are essential in cheesemaking. TRUE Bacteria enable milk to ferment. As a result, the milk is transformed into curds and then into cheese.
- 2.** TRUE or FALSE: There is only red meat. FALSE There is also white meat such as chicken, turkey, duck, rabbit and pork.
- 3.** TRUE or FALSE: A confectioner makes jam. FALSE A confectioner makes sweets and candies.
- 4.** TRUE or FALSE: Honey does not go off. TRUE The antibacterial properties and low water content of honey prevent bacteria from growing and the honey from spoiling.

- 5.** TRUE or FALSE: A hot dish can be frozen. FALSE Dishes should be cooled before freezing, otherwise frosting may occur and the temperature of the freezer may rise.
- 6.** TRUE or FALSE: Fat is a natural preservative. TRUE Fat is widely used in the preparation of preserved meats, as it insulates the product from the air and prevents bacteria from developing.
- 7.** TRUE or FALSE: A ship carrying foodstuffs is bigger than a football pitch. TRUE A football pitch is 100 m long, a ship can be 400 m long!
- 8.** TRUE or FALSE: There are no electric goods vehicles yet. FALSE Today, technological advances make it possible to carry goods in electric vehicles that produce less CO₂.

9. TRUE or FALSE: Walking is a form of soft mobility. TRUE Food products can be transported on foot if the farm, the breeder, the cheese maker, and the vegetable garden are not far away.

Click on the True or False again to return to the previous page



True or False

1. TRUE or FALSE: Use-by date and best before date mean the same thing. FALSE The use-by date is a mandatory date after which the product is no longer consumable. The best-before date only indicates the date after which the product starts to lose its taste or nutritional qualities. All products in general stores have a label on which you can read the best-before date or use-by date.

2. TRUE or FALSE: In the Middle Ages, a costermonger sold apples. True: A costermonger was a seller of apples but also of other fruits and vegetables. A costard was a variety of apple and a monger, a seller.

3. TRUE or FALSE: A temporary store is called a pop-up shop. TRUE A pop-up shop is a shop which is just open for a very short period to sell a particular product.

4. TRUE or FALSE: There are night markets; TRUE. Night markets are often held in the summer, to liven up summer evenings and benefit from the cool of the night.

5. TRUE or FALSE: A CSA can also supply baskets of processed products. TRUE A CSA can also supply cheese, oil, yoghurt or cooked fruit and vegetables.

6. TRUE or FALSE: Farmers also sell through social networks. TRUE They allow farmers to show the seasonal products that are available in real time.

Click on the True or False again to return to the previous page



7. TRUE or FALSE: Consumers pick as much fruit and vegetables as they want. FALSE Some farms provide one basket per household and it is not possible to exceed this amount, others will set a limit in kilograms. The aim is to allow as many people as possible to benefit from this local production, so it is important to share!

8. TRUE or FALSE: Biscuits and cakes for snacks are sold in bulk. TRUE Just like nuts, pasta, rice, flour, lentils and oil for example.

9. TRUE or FALSE: You can barter time. TRUE In a shared garden, you can trade a few hours of gardening for a basket of figs.

Click on the True or False again to return to the previous page



Click on the True or False again to return to the previous page



True or False

1. TRUE or FALSE: In school canteens, the chef may prepare hundreds of meals. TRUE With the help of a kitchen team, the chef is responsible for serving all the children in the school, whether there are a hundred or a thousand of them.

2. TRUE or FALSE: The origin of beef must be displayed. TRUE Restaurant owners are required to indicate the origin of the beef.

3. TRUE or FALSE: Restaurants cannot be zero waste. FALSE Many restaurants are trying the zero waste approach: eliminating straws and single-use cups, composting, anti-wastage recipes, donating unsold food.

4. TRUE or FALSE: You can drink using straws made of pasta. TRUE Pasta straws allow you to avoid using single-use plastic. There are also steel or bamboo straws that are reusable.

5. TRUE or FALSE: Eating slowly helps digestion. TRUE By taking the time to eat slowly, you can chew better for longer and this makes digestion easier.

6. TRUE or FALSE: Only cooks are involved in a solidarity kitchen. FALSE Volunteers who are not professional cooks can help the chefs in the kitchen. They prepare dishes, cut vegetables or help with distribution.

7. TRUE or FALSE: Bees are nectarivores. TRUE Bees feed on nectar, a sweet liquid which they finds in the flowers they forage.

8. TRUE or FALSE: Spinach is the plant which is richest in iron. FALSE It is behind lentils, peas, parsley and white beans.

9. TRUE or FALSE: Your nose and fingers are involved in your sense of taste. TRUE Without touch and smell, you perceive taste far less strongly. When you have a cold and your nose is blocked you cannot smell food in the same way as usual.

Click on the True or False again to return to the previous page



Click on the True or False again to return to the previous page



True or False

1. TRUE or FALSE: Metals can be thrown into the compost. FALSE Metals do not decompose in the composter. Similarly, no coal or stones should go in it either. Finally, avoid throwing meat or fish into the compost, as this may attract rodents.

2. TRUE or FALSE: Refuse collectors have the right to not collect the rubbish if it has not been sorted. TRUE If the refuse collectors see that there is green garden waste in the wrong bin, they may not collect the bins. Sorting properly is essential.

3. TRUE or FALSE: Concrete is a heavy and dense material. FALSE There is a type of concrete called lightweight cellular concrete. Filled with gas bubbles, it conserves water for plants and therefore makes an excellent substrate.

4. TRUE or FALSE: If you don't sort your waste at home, everything will be sorted at the plant. FALSE Whatever you throw in the bin without sorting will be incinerated or buried in landfill. So waste that could have been recycled is lost!

5. TRUE or FALSE: Wipes can be flushed down the toilet. FALSE You must only throw toilet paper into toilets. Baby wipes and make-up remover wipes should be disposed of in the waste bin.

6. TRUE or FALSE: Compost needs to be turned. TRUE It is important to turn the compost from time to time to reactivate the bacteria.

7. TRUE or FALSE: Manure smokes. TRUE Manure smokes because the materials in it burn. Even if there is no flame, steam is released from a dung heap due to the heat.

8. TRUE or FALSE: Biogas is a renewable energy source. TRUE Biogas comes from the decomposition of organic matter.

9. TRUE or FALSE: There are clothes which are made of milk. TRUE There is a technique that allows expired dairy products to be recovered, heated, ground into a powder and finally turned into fibre for making textiles.

Click on the True or False again to return to the previous page



Building a mini greenhouse:

On your marks, get set, do it yourself!



5



1



2



3



4

photos: Margaux Vidotto

Materials

- 12 x 50 cm bamboos
- 5 to 10 plastic file pockets
- sticky tape
- scissors
- string

- **Step 1:** Create a cube with the bamboo by tying it up with string. Tighten it up well!
- **Step 2:** Cut the sides and bottom of the file pockets so that they can be opened up completely
- **Step 3:** Stick the binder pockets together with tape. Match the size of the cover to the cube you have built
- **Step 4:** Place the plastic cover over the bamboo cube. And fit the protruding ends of the bamboo poles into the pockets
- **Step 5:** You can fix the sides of the plastic sheeting with string or tape but keep one side untied. This will be the entrance door to the greenhouse; you need to be able to open and close it.
- **Step 6:** All that's left for you to do is to plant your vegetable and herb seedlings.

Sowing coco beans

On your marks, get set, garden!



1



2



3



4

Photos: Claire Painchaud

It's not that difficult to sow seeds in trays!

- **Step 1: Select the coco bean seeds you want to plant**
- **Step 2: Dig a hole about 5 or 6 centimetres in depth in the soil. The holes should be about 20 centimetres apart.**
- **Step 3: Sow 5 to 7 coco bean seeds in each holes.**
- **Step 4: Cover the seeds with soil. No need to pack it down!**

Don't forget to water the tray, but don't drown it. And pull up any weeds that may invade.

Planting out seedlings on the roofs of Agroparistech, Paris, by Antoine Tardif.

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The agricultural street



Look, we found herbs at the foot of the trees in the streets of Paris!



Photos: Margaux Vidotto



Photos: Véronique Saint-Gès

The street is adorned with greenery from pavement to roof, and even on the walls. Houses can be covered with climbing plants, pavement planters provide a home for vegetables and herbs, and window boxes adorn balconies and fences.

On the roof



On the roofs of AgroParisTech, in Paris, scientists and technicians have landscaped the terrace to grow fruit trees, vegetables, herbs and even to put in beehives.



They also installed a net around the roof to prevent birds from pecking at the seeds.



The growing trays use residues from the city: very light cellular concrete, wood chips, mussel and oyster shells recovered from restaurants, and coffee grounds.

Photos: Margaux Vidotto and Claire Painchaud

Pollination

Here you can see a bee pausing on a garden flower in search of nectar. They pollinate by carrying nectar and pollen from one flower to another. So bees allow flowers to reproduce.



Photo: Margaux Vidotto

Animals come to town



Source: INRAe

Watch this short video to learn more about our friends the bees.

Substrates

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Photos: Margaux Vidotto



Straw



Cellular concrete



bark



Bricks and shells

Substrates are used to retain water and nutrients. They provide a growth medium, favourable to gas and nutrient exchange.

The worm composter

Arti's worm composter.

Step 1



Step 2



Step 3



First we need to build the worm composter. Once the parts are assembled, green and organic waste is placed in the upper bin. At the end of the composting process, the enriched compost and liquid are collected in the lower bin.

Step 4



Photos: Agnès Lelièvre



Recipe

Apple and salted butter cake

Difficulty level: 🌸 🌸

For the cake

- 2 apples
- 100 g flour
- 100 g granulated sugar
- 100 g unsalted butter
- 2 eggs
- 1 packet of baking powder
- 1 pinch of salt

For the caramel

- 100 g sugar
- 10 cl of liquid cream
- 30 g salted butter

- **Step 1:** In a saucepan, melt the sugar with one and a half tablespoons of water. No mixing and no low heat, the caramel must be allowed to colour.
- **Step 2:** Cut the salted butter into pieces and add it to the pan with the liquid cream. You can stir until the caramel thickens.
- **Step 3:** Leave your caramel in the pan off the heat.
- **Step 4:** On to the cake! Preheat the oven to 210°C.
- **Step 5:** Take your tin and butter it. This will make it easier to remove from the tin!
- **Step 6:** Pour your caramel into the bottom of the cake tin.
- **Step 7:** Now cut the apples into slices. Not too thin, not too thick. Don't forget to remove the seeds.
- **Step 8:** Place your apple slices in the bottom of the tin, on top of the caramel.
- **Step 9:** To make the dough, take a bowl and whisk the two eggs with the sugar.
- **Step 10:** Melt the unsalted butter.
- **Step 11:** Mix together the melted butter, flour and baking powder with the egg and sugar mixture. You need to stir it until you have a smooth paste. Make sure there are no lumps!
- **Step 12:** Pour the paste over the apples in the tin.
- **Step 13:** Bake the mixture for 30 minutes.
- **Step 14:** Once the cake has cooled down, enjoy!

Photos: Agnès Lelièvre



Recipe

Recipe for ripe fruit jam

Difficulty level: 🌸 🌸

Ingredients:

- 1kg of plums
- 1kg of sugar
- 1 vanilla pod

Utensils:

- 1 large salad bowl
- a knife
- a skimmer
- a big boiling pan
- glass jars and lids.

- **Step 1:** Start by washing your fruit, then pit all the plums.
- **Step 2:** Using a knife, cut the plums into pieces.
- **Step 3:** In a large bowl, mix the chopped fruit with the sugar.
- **Step 4:** Leave the mixture to stand until the sugar has melted. This can take several hours.
- **Step 5:** When all the sugar has melted, pour the mixture into a pot and bring to a boil for about 20 minutes. Remember to keep stirring!
- **Step 6:** Use the skimmer to remove the foam that forms on top of the jam. Then keep stirring.
- **Step 7:** When the texture of your jam is how you like it, you can pour it into jam jars. To check whether it is ready, pour a drop of jam onto a cold plate and stand it upright. If the jam sets and does not run down the plate, it is ready!
- **Step 8:** Close the jars, turn them upside down and leave to cool.
- **Step 9:** Enjoy your home-made jam!

Photos: Véronique Saint-Ges



Recipe

Tabbouleh with carrot tops

Difficulty level: 🌸 🌸

Ingredients

- 250 g quinoa
- 2 tomatoes
- a few leaves from carrot tops
- 1 small shallot
- a few basil leaves
- one tablespoon of pumpkin seeds
- salt, pepper

- **Step 1:** Fry the quinoa in a pan with a dash of olive oil, remembering to stir regularly so that the quinoa grains soak up the oil.
- **Step 2:** Add double the volume of water and cook with a lid for 15 minutes.
- **Step 3:** While the quinoa is cooking, cut the tomatoes into small pieces and finely chop the shallots and the leaves. Careful, it tastes very strong!
- **Step 4:** Mix the mixture in a bowl and add the cooked quinoa.
- **Step 5:** Mix again, and add a few chopped basil leaves and the spoonful of pumpkin seeds.
- **Step 6:** Add salt and pepper and enjoy!

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A trip to the CSA



We got on our bikes to pick up the baskets from the CSA! Today we picked up a dozen eggs from the neighbouring farm.

Photo: Margaux Vidotto



Photo: Margaux Vidotto

So we were able to make delicious chocolate cookies for a snack.

Make your own basket



Jars for bulk buying

Fill your own basket



Photos: Solène Painchaud

Almonds, sultanas, cashews, sesame seeds,
almond powder, corn, coconut powder

- **Step 1:** Collect empty jars: spread jars, mustard jars, jam jars etc.
- **Step 2:** Clean them in hot soapy water. This will eliminate bacteria
- **Step 3:** Once they are dry, you can fill them with products bought in bulk.

A net for your fruits and vegetables



Photos: Agnès Lelièvre



Here are two examples of nets!

Fill your own basket

- Get a net or a reusable bag to carry your goods home.
Alternatively, you can recycle a bag that you are no longer using, or make one from fabric scraps (recycling curtains, sheets or even tshirts).

Learn how to recognise labels

PDO



PGI



HOME MADE.



ORGANIC

- There are many labels which are used to inform you about the origin or quality of the food you buy.

The PDO label, Protected Designation of Origin, tells you that the product comes from a particular place and has been made in a traditional way, it has a history!

Organic labels indicate that the product is produced using farming methods that respect the environment better. Lastly, the "home-made" label shows that the product was made on the spot with raw, unprocessed materials.

Flavoured ice cubes



Before



After

Photos: Agnès Lelièvre

Making flavoured ice cubes isn't very complicated!

- **Step 1:** Fill your ice cube tray with water.
- **Step 2:** Add your ingredients of choice. We have chosen herbs.
- **Step 3:** Put the tray in the freezer.
- **Step 4:** As soon as the ice cubes have frozen, you can take them out. Put them in your drink!

Ice cubes made with
mint leaves and
verbena

Conservation tips and tricks

Photos: Annie Fargue



Photos: Agnès Lelièvre

Here are some tips to help keep your products fresh:

- **Tip 1:** Slip a cork cut in half into your fruit basket. It absorbs moisture and prevents the fruit from ripening too quickly.
- **Tip 2:** Apples, bananas, peaches, plums, apricots and figs produce a gas that ripens other fruits. Don't mix them with other fruit if you don't want them to rot.
- **Tip 3:** Do not put tomatoes in the fridge, or they will become floury and lose their flavour
- **Tip 4:** Store your fruit and vegetables in a dry, cool and if possible dark place. In a cupboard, for example. And if you see a fruit that is marked, eat it first!

A composting platform



With this composting platform, the waste is brought in, sorted and shredded by this machine. It is then placed in a pile to mature. Earthworms and other micro-organisms do their job to make rich compost.



Organic waste collected by cargo trike



We have finally managed to track down the three-wheeler that collects organic waste. It has led us straight to the giant composter where all the green waste from residents and restaurant owners is collected.

