



## Global Topic 1 – Our Diet and Our Rainforests



**This Global Topic looks at the importance of rainforests and how our food production is negatively impacting these important ecosystems.**

### **What are rainforests and why are they important?**

As the name suggests, rainforests are forests which receive a high volume of rain each year due to their geographic location. Rainforests can be found either in **tropical regions**, such as Central America and northern South America, Central Africa and South-East Asia; or in **temperate regions** such as western Canada, parts of Japan and New Zealand. Rainforests are extremely important for global **biodiversity**; they are made up of, and are home to, a huge variety of plants and animals – many species of which we still haven't discovered! In addition, rainforests play a very important role in **oxygen and carbon cycles**, act as a **carbon sink**, are a source of raw ingredients for medicines and are home to many indigenous tribes whose culture and livelihood depend on the forest.

### **How are rainforests threatened?**

Deforestation is having a huge detrimental impact on our rainforests; large areas of forest are cut and burned to clear the land to grow “cash crops” such as soy and cocoa, raise livestock and grow oil palm, among others. **20%** of the Amazon rainforest has been lost, with approximately **1.4 million hectares** being cleared every year; meanwhile in south-east Asia, 1.3 million hectares of Borneo's rainforest is cut down annually. Deforestation destroys habitats and food supply for a range of species and causes the breakdown of complex ecological relationships that have evolved over hundreds of thousands of years. The removal of our rainforests has far-reaching and long-lasting, negative effects for the health of our planet.

### **How does our lifestyle in Ireland impact on global rainforests?**

A study published in 2016 in the Journal of Public Health Nutrition found that **45.9%** of food found in Irish households are **ultra-processed** foods, making Ireland the **third highest consumer** of ultra-processed foods out of nineteen European countries in the study, after Britain and Germany. Processed foods use a high quantity of cheap ingredients and additives with low nutritional value, which imitate the flavour and texture of more expensive, better quality whole-food products.

#### **Case study: Palm Oil**

Palm oil is an ingredient in approximately **50%** of all packaged products available in Irish supermarkets, from processed foods such as biscuits to cosmetics. The oil is derived from the fruit of the Oil Palm tree, which is native to Africa. However, **approximately 85%** of palm oil used worldwide is produced in palm plantations in **Malaysia and Indonesia**, where only half of the original rainforest remains, primarily due to deforestation for palm plantations, and illegal logging. The survival of many plant and animal species including orangutan, Sumatran rhino and pygmy elephant, are in extreme jeopardy because of this, with many species already lost to extinction.

### How can we tackle this problem?

The palm oil issue is complex – palm yields **over four times** as much oil per hectare as alternatives such as rapeseed, soybean or sunflower; so, to meet global demand it is more efficient to use palm rather than other alternatives. As well as this the livelihoods of many people and communities in palm-growing countries depend on the palm industry. However, there can be no doubt that palm plantations are having a devastating effect on biodiversity and habitat loss. The best options are to only buy products certified as containing “**Sustainable Palm Oil**” or to avoid palm oil by eating more **locally-grown whole foods** rather than cheaply produced, highly processed and far-travelled food “products”. Products certified as containing Sustainable Palm Oil have to use palm oil that was produced to meet certain economic, ethical and environmental criteria set by the **Roundtable on Sustainable Palm Oil**.

### Actions & Ideas – what can YOU do?

- Compare 5-10 common processed food packets e.g. biscuits, snack bars etc. to see what ingredients they contain. Make graphs to show the number and type of ingredients in different products.
- Bake your own cookies: compare ingredients with shop-bought cookies.
- Make a list of products certified as using Sustainable Palm Oil and pledge to use these products instead, or locally produced palm-free products instead.
- Carry out a research project into a cash-crop e.g. oil palm, soy, cocoa. Some questions to look at might include: who grows it and who uses the end-product? Who benefits the most from cash-crop plantations? What are the environmental impacts of these plantations?
- Carry out a research project on a rainforest species of your choice and investigate how deforestation has affected their population over the past fifty years e.g. orangutan, pygmy elephant, proboscis monkey.
- Hold a fundraiser to raise money for a rainforest charity or charity that protects affected species and supports small-scale local farmers.
- Learn about whole foods: explore the value/harm of processed foods versus whole foods or homemade alternatives. You could focus on the environmental and/or health impacts.
- Bake scones, buns or biscuits with herbs (savory scones) or fruit from your school garden.

### Links and Resources

You can find out more information about deforestation issues at the links below:

[Roundtable on Sustainable Palm Oil](#)

[World Wildlife Fund – Palm Oil Industry](#)

[Rainforest Alliance](#)

[World Wildlife Fund – 8 things to know about Palm Oil](#)

[World Wildlife Fund – Deforestation in the Amazon](#)

[World Wildlife Fund – Deforestation in Borneo and Sumatra](#)





## Global Topic 2 – Pesticides and Wildlife



### What is a pesticide?

**Pesticides are** substances that are meant to control pests, including unwanted plants (weeds). You can group pesticides based on:

1. the **type of pest** they are trying to control (e.g. herbicide/aka weed killers/unwanted plants, insecticide/insects, rodenticide/rats, Fungicides/fungi, Bactericides, such as disinfectants or antiseptics to kill bacteria and Larvicides, used to kill mosquitoes or larvae),
2. their **chemical makeup** (e.g. organic, inorganic, synthetic or biological (biopesticide))
3. and **physical state** e.g. gaseous (fumigant).

For more information on pesticides, watch [this video](#) and for more scientific insights [click here](#).

### How are they used and what are some of their impacts?

Pesticides are most commonly used in agriculture to protect crops from being damaged by pests, but they are also used in public health to kill carriers of disease, in gardens to protect plants, on roadsides, paths, around trees and street furniture and all traffic islands which pedestrians use to maintain infrastructure and on pets to protect against fleas, mites etc. Although pesticides have benefits, they can also be toxic to humans and other organisms.

Over 98% of sprayed insecticides and 95% of herbicides reach a destination other than their target species, including non-target species, air, water and soil. (Miller, G.T. (2004) Sustaining the Earth. 6th Edition.)

When no pesticides or artificial fertiliser is used in farming, it is called organic farming ([click here](#) for more information on organic farming in Ireland). Some of the pros for organic farming include; co-exists with other systems, sustains soil fertility and protects the environment, wildlife and non-renewable resources ([click here](#) for more information ), also there is no pesticide residue left on food. The cons to organic farming are that produce is generally more expensive to non-organic, it's more labour intensive for farmers and the produce tends not to last as long on the shelf.

Non-organic farming uses pesticides to increase food production, increase profits for farmers and to prevent diseases. ([Click here](#) for more information) On the downside, the chemicals involved can leave residue on food and can reach and harm non-target species including humans, causing health problems and reducing biodiversity, they can also if applied incorrectly, pollute water systems and contaminate soil. ([click here](#) for more on benefits and problems)

### Most commonly known impacts:

- **Rodenticides:** birds of prey such as barn owls, buzzards, red kites and kestrels are at risk from eating rats that have been poisoned (secondary poisoning). ([Click here](#) for more information)
- **Insecticides:**
  - i) **Neonicotinoids** – kill honeybees, bumblebees and solitary bees via residues in bee pollen and nectar; dust drift during the sowing/application of the treated seeds; and water consumption. ([Click here](#) for more information)

**ii) Slug pesticides** (pellet form) – can harm wildlife as the toxin is travelling up the food chain, for example from slugs to birds to cats. It is not uncommon for dogs or cats to become very ill this way. Hedgehogs are particularly susceptible, and the poison has contributed to their decline e.g. a few decades ago there were approximately 30 million hedgehogs in Britain; now there are only about one million. ([Click here](#) for more information)

- **Herbicide** (aka Weedkillers e.g. Glyphosate (Round-up)) – is toxic to humans, wildlife and pets and exposure happens via the food they eat, the air they breathe, the water they drink and the lawns, gardens, parks and other environments they frequent.

### **What can you do to raise awareness and reduce the environmental impacts?**

- Identify your potential pests and their impacts.
- Consider how to create an Action Plan for your school. This could include:
  - o Checking your current pest control practices with your caretaker.
  - o Investigating alternative methods for pest control.
  - o Drawing up an action plan for your school that minimises the use of pesticides.
  - o [Click here](#) for some examples and see below.
- Use natural methods specific to your pest e.g. manual pulling of unwanted plants, introduce or encourage predator species e.g. ladybugs, birds, hedgehogs, plant away from where pests live, construct predator proof fencing, time planting for when pests are least problematic/not as active, set trap crops to entice pests away from real crop, application of composted yard waste has also been used as a way of controlling pests etc. [Click here](#) for more information.
- Write to appropriate ministers, public reps to ban the use of e.g. rodenticides, glyphosate (Round-up) etc. nationally. [Click here](#) to find your government representative.
- Host a student debate about controlling rodents.
- Put together an information leaflet on all that you discover and send it out to the whole school community.
- Put together a bright and interesting display on your notice board and/or an information stand on an open day to share all you learn.
- Invite local experts to come and speak to your students on various related topics e.g. bees and pesticides, organic farming and gardening etc.
- Create posters on the main types of pesticide poisoning in wildlife, including pets and stick up in your community or local vets and put together a pet safety sheet for whole school community.



## Global Topic 3 - Our Diet, Our Climate

This Global Topic explores the link between Climate Change and dietary habits, specifically, the consumption of meat and dairy.



### What is climate change?

**Climate** refers to the average **weather** patterns over a long period of time; from 30 years to hundreds of centuries. Our climate has always been changing in natural patterns, from ice-ages to interglacial periods, like today. However, humans are causing increased **global warming** by burning lots of **fossil fuels**, such as coal, oil, gas and turf, making the **greenhouse effect** much stronger and causing our temperature to rise. We are also cutting down **trees**, which store **carbon dioxide**, and clearing land to raise **livestock** which release **methane**. Watch this [video](#) on “climate change according to a kid” or this [video](#) which uses the game of Tetris to explain how humans are adding too much carbon to Earth’s delicate system. Climate change is causing sea ice to melt, rising sea levels and bringing more extreme weather events such as **hurricanes**, floods and droughts. Read more about it [here](#).

Test your climate [knowledge](#)!

### How is our climate linked to our diet?

Every food **choice** we make has **consequences** on our climate; what we **eat**, how much we **waste**, how it was **produced** and where it has **travelled** from. A study from the USA found that transport accounts for 11% of greenhouse gases in the food industry, whereas production methods accounted for 83%! Globally, today’s food production contributes more to global warming than all cars, trucks, airplanes and trains on the planet. Read more about this [here](#). Seasonal and local food will be cheaper, fresher, richer in nutrients, supports the local economy and won’t have travelled long distances to get to your plate. Calculate the **carbon footprint** of your food choices [here](#). Higher carbon footprints mean more **greenhouse gases** in our atmosphere which is increasing global warming and causing our climate to change faster. Climate change will also affect vulnerable species and impact migration and hibernation patterns. It is already impacting farmers, fisheries and our [oceans](#). Read more [here](#).

### What do we mean by meat and dairy products?

Meat and dairy products (such as milk, cheese, butter, yoghurt etc.), are now part of our daily diet and raising livestock, such as cows and sheep, requires lots of land and water. As well as the resources used, livestock release (or belch!) huge amounts of methane, a strong greenhouse gas that adds to global warming. One-third of the world’s farming land is used to feed livestock and one hamburger alone has a [water footprint](#) of 2,400 litres!

### How much do we produce and consume?

The biggest meat eaters in the world live in the USA and Europe and this trend is rising. The agriculture industry in Ireland accounts for 7.6% of our economy, 10.7% of our exports and 8.4% of our employment. Read this [Bord Bia](#) factsheet for more information. Agriculture is also responsible for 33% of Ireland’s greenhouse gas emissions. Read this [EPA](#) factsheet for more information. **Take the carbon diet quiz!**

### What can you do?

- Run a food-growing competition between classes in your school
- Organise a tasty plant-based pot luck lunch
- Introduce Meatless Mondays in your school
- Have a climate conversation with your friends or family
- Write to your politicians about climate change and check out the School Strike4Climate!
- Research how to become a [Climate Ambassador](#)



## Global Topic 4 - Protecting Pollinators



This Global Topic looks at the importance of pollinators, such as bumblebees, honeybees and solitary bees in Ireland and abroad.

### What are 'pollinators' and why are they important?

To make a seed, plants must receive pollen into their flowers; this pollen must come from another flower of the same type of plant. This movement of pollen is called pollination. Without pollination seeds would not form, and without seeds, there would be no new plants.

For more detailed information on the process of pollination, [click here](#).

Some plants are pollinated by the wind, others are pollinated by animals, such as insects, birds (e.g. hummingbirds) and mammals (e.g. some bats). In Ireland insects are our main pollinators, and most pollination is carried out by bees. We have one species of Honeybee and 98 species of wild bees; this includes 21 bumblebee species and 77 solitary bee species. Hoverflies, butterflies, moths, beetles, wasps and ants also play a role in pollination.



Pollinators are vital to the survival of many plants. Plants provide a very large part of our diet, as well as other resources such as wood, that we depend upon. Plants are very important to wildlife too; wild plants provide food and shelter to most of our wild animals. For more information on Ireland's Pollinators, [click here](#).

Bumblebees are a small neat group of animals that are handy to learn to identify, [click here](#).

### Why are pollinator populations plummeting?

- One third of our 99 bee species are threatened with extinction from the island of Ireland.
- Just like us, pollinators need food and a safe place to live. The main reason they are in trouble is hunger; our landscape, from farms to schools and gardens, no longer provides enough food.
- [Click here](#) to learn more about why pollinators, and bees specifically, are in decline and how to protect them (this is in the introduction to the School Pollinator Plan).

### What can you do to protect pollinators?

- Draw up a Pollinator Plan for your school, [click here](#) for a 'how-to' guide.
- Other Sample Actions that you can take at your school could include:
  - o Planting a diverse range of bee-friendly flowering plants; ones that flower at different times of the year, so that there is always food at your school for bees. [Click here](#) for a 'planting code' for pollinators.
  - o Research the hedge-cutting laws in Ireland. Your school could write to the Minister for Heritage to request that the hedge-cutting season be kept as short as possible. [Click here](#) to get a taster on the issue.
  - o Identify areas of your school grounds that might be good for being a shelter for bees.
  - o Research Neo-nicotinoids chemical sprays. They are currently banned in Europe. [Click here](#) for a recent article explaining the issues.
  - o Host a debate on organic versus non-organic farming methods.





## Global Topic 5-Food Waste



This Global Topic will explore the fact that vast amounts of food grown never gets eaten.

### What is food waste? How/where does it happen?

Food waste refers to the discarding or alternative (non-food) use of food that is safe and nutritious for human consumption. It is wasted in many ways from leftovers at home and in school to expired 'best before dates' by retailers and consumers or removed from the supply chain during sorting operations. Food loss refers to any food lost in the supply chain between the producer and the market.

There are 3 types of food waste thrown out:

60% Avoidable food waste (left overs, plate scrapings, perishables)

20% Potentially avoidable food waste (bread crusts, potato skins)

20% Unavoidable food waste (General rubbish, banana skins, chicken bones etc)

The Urban food waste collection (brown bin) by law was introduced in 2013. One third of the food we buy ends up in the bin. The average household bins between €400-€1,000 worth of food each year. As a nation that's a million tonnes of food waste per year, enough to fill Croke Park two and a half times! 1.3 billion tonnes globally! This is an alarming figure if you consider 1 billion are suffering from hunger per year. Reducing food waste is critical to creating a Zero Hunger World and achieving the second Sustainable Development Goal. Goal 12 'Responsible Consumption and Production' also sets out a 2030 target to halve per capita global food waste at the retail and consumer levels and reduce food losses along production and supply chains including post-harvest losses. Food is not wasted in the same way in every part of the world. Most food waste worldwide actually occurs when food is left in the field. In lower income countries 40% of food is lost post-harvest and during the processing stages due to poor infrastructure and a lack of efficient storage technology.

### Food Labelling

A number of labels and dates on foods often confuse the consumer resulting in food waste.

Best Before dates relate to the food quality, taste, appearance, nutritional value etc. Often used on tinned food and are generally safe to eat past this date once stored correctly.

Use by dates are used for highly perishable foods such as dairy and poultry and should never be consumed after this date

Sell by/Display until dates are not a legal requirement and assist with stocktaking so can be ignored.

Expiry dates are never safe for consumption after the given date.

### What are the environmental impacts?

A huge amount of resources go into the growing, production, transportation and packaging of our food. Around 20% of global GHG emissions are related to the production, processing, transportation and storage of food. An area larger than China (1.4 billion ha) is used to grow food that is never eaten. 25% of the world's freshwater supply is used to grow food that is never eaten.

Uneaten food ends up in our landfills releasing harmful greenhouse gases. In landfill food breaks down anaerobically producing methane, a greenhouse gas 21 times more potent than CO<sub>2</sub>. Carbon dioxide, Methane, Nitrous oxide and Hydrofluorocarbons (fluorinated gases used in refrigeration) are produced and emitted from food production to our refrigerators. Metal cans, plastic bags and cardboard boxes our food comes in contribute too. According to the U.N Food and Agriculture organisation, 30% of food is wasted globally contributing 8% of total global greenhouse gas

emissions. If food waste was a country, it would come third after the U.S and China in terms of impact on Climate Change. Reducing food waste is one of the most important actions we can take in combating Climate Change.

### What can your school do?

- **Record/Measure**-Pick a typical school day and investigate how much of the school lunches in your class are wasted or not eaten. You can find a guide to completing this activity in our resource section [here](#)
- **Investigate** the option of a Compost Bin (and/or staff training on composting!)
- **Investigate and generate awareness around** use by and sell by dates
- Use what you have before buying more
- Compare how a pupil in Ireland and an indigenous Amazonian might differ in terms of attitudes and behaviours on waste
- Planning-Shopping-Storing-Cooking
- Explore systems that are set up to tackle food waste e.g. Food Cloud
  - Circulate a calendar to “Eat in season”! [Seasonal Calendar](#)
- Try our Food Waste quiz [here](#)
- For further tips please go to
  - <https://www.mywaste.ie/what-to-do-with-my-food-waste/>
  - <https://stopfoodwaste.ie/>
  - <https://www.globalgoals.org/12-responsible-consumption-and-production>
  - <https://www.eatresponsibly.eu/en/materials/>
  - <http://www.fao.org/food-loss-and-food-waste/en/>
  - <https://www.youtube.com/watch?v=lqfD3p8Fn-g>
  - <http://www.foodwastemovie.com/quiz-js/>
  - [Where Food is lost](#)
  - <https://vimeo.com/154439089>





## Global Topic 6 - Food Miles



This 'Global Topic' explores the fact that much of our food travels vast distances to reach us. This is costly in terms of fossil fuel use and additional resources used in processes to keep it 'fresh'.

### What are Food Miles?

Nowadays food is routinely transported very long distances from producers to end consumers; these distances are called "Food Miles". In Ireland, as in the UK, comparatively little of the food we consume comes from local producers. Most of our 'fresh' produce has been transported over great distances, for many days if not weeks! It would not be unusual to see sweet potatoes from the U.S.A., green beans from Kenya or strawberries from Spain for sale in our local supermarkets. A major environmental fall out of this is fossil fuel use, and therefore Climate Change. Often the energy it takes to transport our food is more than the energy (calories) we receive from eating it!

Check out how far your lunch has travelled by clicking on this [Food Mile Calculator](#) link!

### What environmental and social impacts do foods produced in this way have?

Currently, the relatively cheap fossil fuel energy enables intensive agriculture and long-distance transportation to be economically viable; it has created global industries of food production and food distribution. The price for these goods in the shops does not reflect the real costs incurred by society and the environment for such practices. Some of these costs are outlined below.

**Energy Use:** Food miles accumulate across the food chain; from the country of origin, to your home. To add to the fossil fuel use (and associated climate crisis), additional processing is resource and energy intensive. In order to protect food in transit; processing, packaging and preservation techniques are routinely used. It has been estimated that these practices can use up to ten times the energy that it took to originally grow the crop. [Click here](#) for further data on this.

**Single-Use Plastic:** In order to protect food in transit, much of it gets wrapped or packaged in different materials. For many products that means plastic wrap, plastic sachets, or harder plastic containers; most of which are single-use, and many of which are not readily recyclable. It has become the norm for most people to take bag-loads of packaging home from a food-shopping trip. Lighter plastics are not recyclable in Ireland, and so most or all of it gets dumped in landfill or taken for incineration; both of which cause negative environmental issues for wildlife and humans. To learn more about the big problem with plastic, take a look at the following site [Ireland's Plastic Waste](#).

**Food Sovereignty:** Long distance trading leads to agriculture specialisation and intensive farming practices and to focusing resources on the export market rather than towards local needs and self-sufficiency. For example, in Ireland we produce enough meat to feed the country's population, but not nearly enough fruit and vegetables; this would put us in a vulnerable situation should global transport links ever get disrupted. Similar patterns of vulnerability and examples of food production systems that prioritise profits and the needs of foreign markets, instead of prioritising local needs and the environment can be seen in many countries around the world. Find out more about this topic [here](#).

### What else needs to be considered?

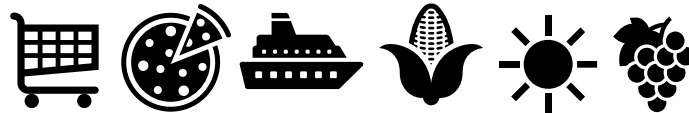
It is important to bear in mind that it is usually more energy efficient to grow products in their natural climatic region, and in season, and then to ship them to us in Ireland, compared to intensive methods to try to produce the same crop here, e.g. bananas would need to be in heated glasshouses for months in Ireland, which would end up

using more fuel than importing them en masse from northern Africa. Therefore, if you are buying bananas, try to get them from the nearest source, and when they are in season at that location. Read [this article](#) for more details on this topic.

***As a rule, the best choices for the environment, society and the local economy involve buying local food, when it is in season.***

**What can you and your school do to tackle the problem?**

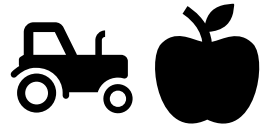
- Do an [audit of food miles](#) by checking products at school or at home. Watch this Green Schools [video](#) with suggested activities to help.
- Find out ways to reduce this by:
  - o Learning about local seasonal foods
  - o Find out if there are food producers local to you. If so, invite them to visit your school.
  - o Find out if any relatives of students or school staff produce food – e.g. eggs, honey, fruit, veg, meat? If so, invite them to come and talk to the school about their work.
  - o Learn about foraging- what is it? Is there anything local to you, e.g. blackberries that you could forage and eat?
- Read the following articles and have a debate about food choices:
  - [“Food Miles – All you need to know”](#)
  - [“Food Miles Exercise – Don’t buy foreign strawberries in summer”](#)
- Investigate Food Packaging policies in your school
- Learn about the [‘Sick of Plastic’ campaign](#), and get ideas of how to reduce plastic waste and tackle plastic in your community.
- Create posters or infographics for your Green-Schools notice board on the pros and cons of local food versus food coming from far away, consider social, economic and environmental factors.





## Global Topic 7 – Who is your farmer?

This Global Topic looks at the importance of food traceability, knowing your producers and finding ways to support your local growers.



### Who is your farmer?

This 'Global Topic' will explore the fact that much of our food travels from far away, and we are very much out of touch with the growers and producers.

### Where does your food come from?

According to the Central Statistics Office (CSO), Ireland imported 72,000 tonnes of potatoes, 47,000 tonnes of onions, 23,000 tonnes of cabbage, 15,000 tonnes of lettuce, and over 60,000 tonnes of apples in 2017 (despite having the right climatic conditions for growing all these crops here!).

The general trend is that we know less and less about how our food is produced. We are not only increasingly removed from our farmers geographically but also through the increased level of processing that has become the norm. Processors, brands and supermarkets have helped to widen the gap between consumers and farmers.

As we rarely, if ever, know the farm from which our food has come, how can we know if farmers receive a fair price for their produce? Can we know that the farm workers are fairly treated, in terms of pay and conditions on the ground? Do we know how the animals, the landscape, or the produce are treated? What chemicals, antibiotics and other substances are we being exposed to through the food that we are eating?

To understand this issue in greater detail, and to read a case-study about orange growers, take a look at 'Trend No.4', page 27 in [this booklet](#).

### Processed Vs Whole Foods

Whole foods are those which have not been changed since they were grown on the farm, for example an apple or carrot. Processed foods are those which have been altered in some way. This could be a simple change like chopping, canning or drying or it could involve adding chemicals to help preserve the food, make it appear more attractive etc. Example of processed foods are bags of chopped apples, tinned tomatoes or mashed potatoes. Each step in the food industry system (food production, processing, transportation, storage, distribution and marketing) has some impact on the environment. By choosing whole foods, we can reduce the impact as we are cutting out at least one step, which is processing. Processed foods require energy, and also contribute to air and water pollution. Processing food can lead to by-products and food waste. Processed foods are also often over packaged, adding to the waste and litter problems associated with plastics.

### Supporting Local Farmers

We can narrow the gap between production and consumption by getting involved in the following:

- Direct sales at the farm: read more about that [here](#)
- Farmers' markets: Search for a market near you [here](#)
- Community-supported agriculture (CSA) schemes: read more about it [here](#) and investigate if there is a scheme near you!

These are good for the farmers and consumers because:

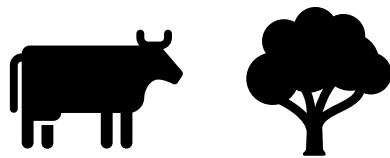
- Farmers receive a greater proportion of the sale price.
- Consumers have a chance to talk directly to the farmer and can learn about and influence how their food is produced (e.g. enquire about fertilizer-use and pesticides).

Remember that as consumers, we do have the opportunity to influence the model of farming even when the farms are far away; by buying “organic” and “fair trade” produce we are supporting these systems, and are therefore helping to ensure farmers or farm workers work in a safer environment, earning a decent wage.

To learn more about the FairTrade movement visit the [FairTrade Ireland website](#).

**Ideas for action:**

- Visit farms in your area and discuss what it means to them to receive a fair price for their products.
- Find out about the local products sold directly by local farmers
- Organise a farmers’ market at school.
- Organise a fair trade breakfast at school and tell people the story of their food.
- Organise a ‘local food picnic’ at your school in May or June, to celebrate the local harvest at this time of year.
- Draw up a ‘Local Food Plan’ or a ‘Fair Food Plan’ for your school helping the community to source quality food locally.





## Global Topic 8- Crop Diversity



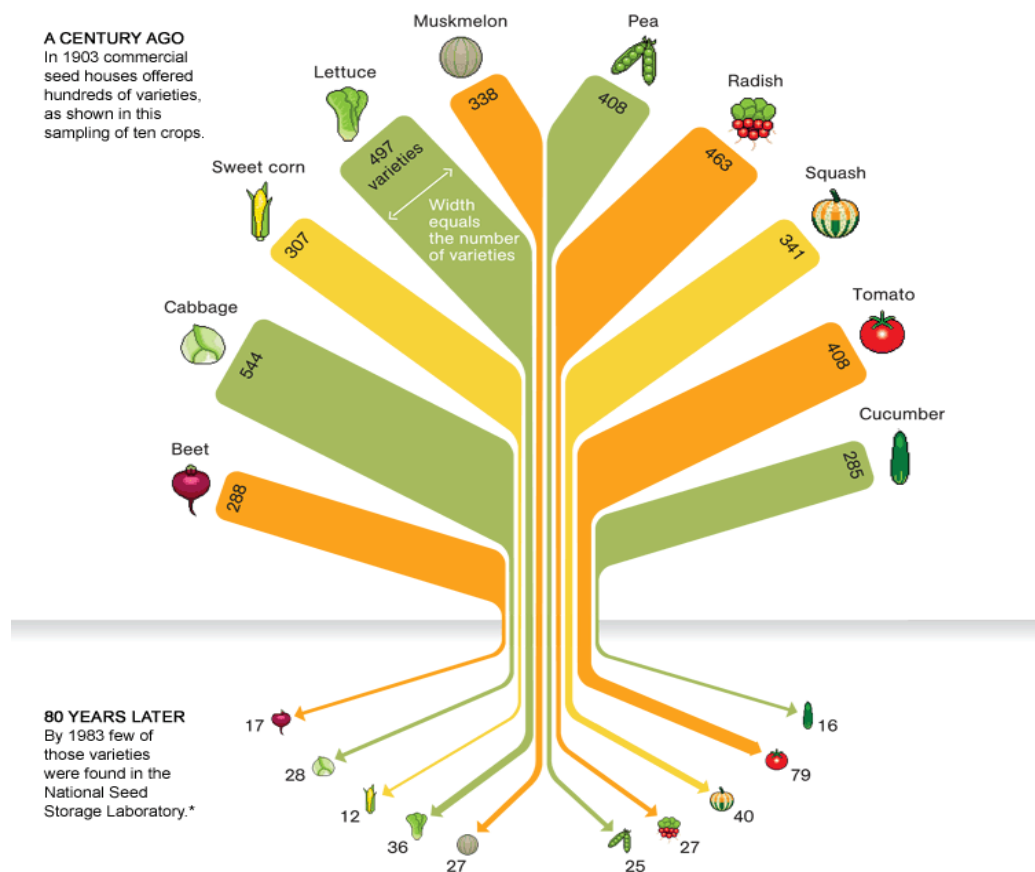
This topic examines how the variety of food crops being grown has decreased over the last 100 years and the impact this may have on food security and the environment

### Agrobiodiversity

The term biodiversity includes the plants we eat! There is diversity within different types of crops: lettuce, potatoes, corn etc. But there is also diversity within a species. Not all carrots or bananas are the same! Did you know that it is estimated there are about 120,000 different strains of rice? Agrobiodiversity is the term used to describe the variety within plants and animals that are used in food production either directly (by eating) or indirectly (needed to help grow or produce food to be eaten).

More industrialised, large scale farming and the need to produce food on a limited budget has led to a decrease in crop diversity. 60% of the planet's energy intake (food that we eat) comes from just four different crops (rice, wheat, corn and potatoes). Thousands of species of food crops which are no longer being grown are going extinct every year.

While in the past many different varieties of each species were grown around the world depending on region, local culture, growing conditions etc now there is often the same few varieties of each crop being grown around the world. The varieties chosen have many positive qualities. They are generally the most cost effective, produce the largest yield and look most appealing to consumers. We often only like to buy fruits and vegetables that are the same shape, size and colour which leads to these uniform strains of crop being grown more often. More importantly, selection of higher yielding crops like wheat has been responsible for increasing the amount of produce grown on the same area of land and lifting a huge number of farmers out of poverty whilst providing enough food for greater numbers of people.



However, there are problems with a lack of diversity in crops.

- They are vulnerable to attack from pests. If only one species or particularly variety is being grown and there is an outbreak of harmful insects or a fungal or bacterial infection the crop could be wiped out. Whereas, if there were multiple varieties the possibility that some would be resistant to this pest are much higher.
- Weather conditions. All strains will have weather they are best suited to growing in. If there is a shortage of rain, sunshine etc that crop may fail. The greater number of strains there are growing the more likely it is that some will thrive no matter what the weather conditions are like. This is particularly important now with the increasingly unsettled weather patterns caused by climate change. The weather is more and more unpredictable which means it is difficult for farmers to know whether their crops will grow well. By planting a greater variety of strains there is a greater chance that some will be able to cope with whatever the weather conditions are.

#### Benefits to crop diversity:

- Increased diversity of crops in a farm can lead to improved soil fertility. By having a mixture of crops which are using and returning nutrients in the soil in different ways the soil health can be improved.
- Studies have found that fields with diverse species of crops being grown in them can produce higher yields during periods of less rainfall partly due to improved soil quality.
- Increased levels of diversity in crops can lead to a decreased need for chemical fertilisers and pesticides. Those additives can have negative effects on the environment by running off into nearby water bodies or getting into the food chain through non targeted species.
- Studies have shown that fields with diverse crops and potential nesting sites have a significantly higher number of pollinators than fields with just one species of crop growing. Pollinators play a huge role in global food production with roughly 35% of global food crops dependent on pollination and their numbers are currently in serious decline. 80% of the overall biomass of insects have disappeared in the last 30 years.
- Several studies have shown that increasing the variety of crop strains grown in a field provides resilience to pests. In one major study in China investigating “rice blast” (a fungal disease affecting rice) thousands of farms planted some rice strains who were resistant and others which were susceptible to the infection and found that when susceptible crops were planted with resistant varieties they had an 89% better yield and were 94% less likely to be affected by the disease than those that were planted in a monoculture.
- The greater the diversity of crops grown the higher the levels of available nutritious foods will be. The current focus on a small number of staple crops has led to a decrease in foods grown which contain important micronutrients which are crucial for a healthy diet.

#### Irish Potato Famine and Biodiversity

The Irish potato famine of the 1840s was one of the worst periods in Irish history. Millions of people died or were forced to emigrate in this period. At that time, the diet of most Irish people was mostly potatoes and one strain “The Irish Lumper” in particular. This was high in nutrition and could be grown in small areas which meant a small patch of land could support a family if this potato was planted. The famine occurred when an infestation of blight (a type of fungus) destroyed the potato crop. The blight infestation moved through fields which had the same potatoes planted over and over again so there were no barriers to halt the spread or slow it down. There are thousands of different varieties of potatoes including some which are resistant to this blight. However, these were not being grown in Ireland at that time.

Despite our knowledge of impact of crop diversity on the Irish Famine the same issues persist today. Currently there is a fungus called Stem Rust, a pest of wheat which has been slowly spreading through Africa and has been found in Italy. Wheat is the primary food source for roughly 1 billion people. Only 10% of wheat varieties which are being grown around the world are resistant to this fungus. This leaves the remaining 90% of wheat growing vulnerable to infection. Food security around the globe could be improved if the diversity of crops and the crop strains was increased.

## Actions to take

- Learn more about the Irish potato famine and how the lack of crop diversity played a role in its spread. How can we avoid this in the future?
- 30,000 species of edible food crops exist. But we usually only eat about 30 types! How many can you name? Learn about some food crops that we don't usually eat.
- When growing your own food, you can help to increase and preserve the food biodiversity at home or in the school garden by planting a diverse array of seeds. You can even get local variations of some seeds from seed sharing organisations like "Irish Seed Savers". This organisation collects and distributes traditional seeds that were grown in Ireland that are now not available to buy. Maybe you have family or friends who have been growing food crops who would give you some different types of seeds.
- Collect, save and swap seeds produced by your crops. Some crops are easier to collect than others. Some of the most straight forward to collect are those from peas, beans, lettuce and tomatoes. Try starting with these. You could also keep a "seed bank" or "seed library" in your school. Store and label a few seeds collected each year and watch it grow. You could swap some of your seeds with family, friends or other schools and start to build a diverse collection.
- Learn about community seed banks around the world which allow famers and communities to share resources. Investigate Svalbard, a large global failsafe seedbank located near the North Pole which holds thousands of species of seeds in reserve as a back up to the world's seed supply.

## Resources and Links

- Check out trend 5 in [this booklet](#) to learn more about food diversity.
- Article from National Geographic on food security and diversity ([Food Ark from National Geographic](#))
- Interactive chart showing types of food eaten by people around the world. (Ireland not included)  
<https://www.nationalgeographic.com/what-the-world-eats/>
- For more detailed information on how to go about saving seeds check out this website:  
<https://www.seedsavers.org/how-to-save-seeds>
- To learn more about Svalbard, the global seed vault and even take a virtual tour follow this link:  
[Crop Trust- Seed Bank](#)