

## How plant foods are grown on farms.

**Intensive farming** is the mass production of (the same) plant crops in large fields, glasshouses or poly-tunnels, or thousands of livestock in large barns and sheds. It is used because it feeds a growing population.

### Advantages

- Food is cheaper to produce – less land used, less labour is required.

### Disadvantages

- Concerns about animal welfare
- use of pesticides and effects of these on environment and water supply;
- Use of artificial fertilisers and effects of these on environment and water supply
- Possible spread of disease
- Amount of energy used to produce meat and dairy foods
- Effects on local geography and soil quality.



**Organic Food-** grown without use of artificial or chemical fertilisers.

### Advantages:

- Farmers develop fertile soil by adding organic matter e.g. manure.
- Farmers rotate crops so the soil doesn't have all the goodness taken out.
- Pesticide use is severely restricted – farmers encourage wild, natural predators such as ladybirds and other insects to control pests.
- Organic foods are produced as naturally as possible, using organic farming methods

### Disadvantages

- Requires much manual labour (people) to remove weeds + manage crops
- Organic agriculture is carried out subject to a set of legally defined standards. Overseen by the Soil Association

**There is an increase in sales of organic food because:**

- Health reasons: Organic produce contains fewer pesticides; there are some concerns about the health risks associated with chemicals.
- Taste: Organic food is often fresher because it doesn't contain preservatives that make it last longer.
- Environmental: Organic farming practices reduce pollution (of air, water, soil), conserve water, reduce soil erosion, increase soil fertility and use less energy. Farming without pesticides is also better for nearby birds and small animals as well as people who live close to or work on farms.
- Animal welfare: Farm animals are reared humanely and not routinely fed antibiotics to suppress disease or promote growth. Organically raised animals are not given antibiotics or growth hormones. Animals are free-range and can graze.



## How animal foods are reared

Animals are reared by humans specifically to provide meat + products, e.g. cows - reared for beef and milk + poultry for eggs + meat.

**Factory farmed:** the animals don't have much room . Livestock (animals, birds and fish) are reared in large numbers often indoors in large sheds/cages/tanks which is intensive farming.

### Advantages:

- Animals are kept inside in warm sheds so they don't waste much energy moving around. This means that more of their energy goes into meat, egg or milk production.
- Animals are sometimes given growth hormones, force fed (to speed up growth) making meat production quicker and cheaper
- Cheaper to produce and efficient.

### Disadvantages:

- People are concerned that the lives intensively farmed animals live is not nice because animals do not act naturally.
- The meat is sometimes considered to not taste as nice as less intensively or organically reared.

**Free-range production:**

### Advantages:

- Animals have more space and are often free to roam.
- Not given growth hormones to speed up growth
- There are higher animal welfare standards and the animals live nicer lives.

### Disadvantages

- Less food is produced in free range conditions.
- Extra land needed for free roaming adds to production costs.
- Animals waste much energy moving around. This means that less of their energy goes into meat, egg or milk production. This makes these products more expensive as the animals take longer to grow.
- Products that are free range are more expensive.

The **Red Tractor** symbol lets consumers know that the producer meets standards of **food safety, hygiene, animal welfare** and **environmental production**. Food can be traced back to its producer. The **RSPCA Assured** symbol can be found on eggs, fish and meat to show that the producers have followed **strict** RSPCA welfare standards which cover every part of an animal's life including **diet, bedding, lighting** and how they are **transported**



## Genetic Modification

- Genetically modified crops are foods used in agriculture.
- Their DNA has been modified, using genetic engineering techniques.

The aim is to introduce a new trait to the plant which does not occur naturally in the species.

- This may be to increase yield.
- Scientists 'cut and paste' a gene from another organism into a plant's DNA to give it a new characteristic or to allow the plant to exist in a more hostile environment than normal.

### Advantages

- Less pesticides are needed
  - some crops could then be resistant to disease.
  - Crops grow more quickly
- There are higher yields of crops for the same amount of fertiliser
- Cheaper to produce (because the yield is higher)
  - Longer shelf life so less food is wasted.
  - Crops ripen earlier than usual so fresh food can be available locally earlier in the year.
  - Crops can be modified so that they contain **extra nutrients** in LEDCs e.g. golden rice has been genetically modified to contain carotene (vitamin A)

### Disadvantages

- Some consumers are concerned about GM foods because of the unknown side effects and more research is required.
- It is not possible to tell simply by looking whether a food has been genetically modified or not.
- Another concern is the effects of GM crops on the natural environment – some people believe we should not be changing the natural process of plant and animal reproduction.
- There is the possibility of some people being allergic to specific GM foods because a particular characteristic has been put into them.

## Food processing

**Primary processing:** foods are processed straight after harvest or slaughter (when livestock are killed), to get them ready to be eaten or ready to be used in other food products. This will include stages for fruit and vegetables e.g. sorting (grading); trimming; throwing away misshapen or damaged foods; washing; wrapping if the food is delicate; adding identification labels and storing.

Foods are processed to make sure they are safe to eat and to extend shelf life



## Caught food

Humans have hunted for wild animals, birds and fish. Now, certain species of animals and birds are reared in large numbers on farms for sport (to hunt). This is **wild game** and includes deer (venison), rabbits, hare, wild boar, pheasants, quail, guinea fowl, grouse, salmon, brown and rainbow trout and seafood e.g. mussels. **Fish** is caught by trawlers using nets and they may be processed on board (factory trawlers). There are different methods of trawling e.g. drag, bottom trawling or dredging.

### Advantages

- Where fish are factory processed at sea they are frozen and freshness is guaranteed

### Disadvantages

- Some methods of trawling is destructive because the seabed is stripped of corals which are the natural habitat of marine life
- Trawlers trap unwanted animals like dolphins or turtles in their nets
- Over fishing is when more fish are caught than be replaced by natural production

### More sustainable methods are:

- long line fishing using a fishing line with baited hooks secured between 2 buoys meaning fewer fish are caught
- Hand catching or hand diving e.g. scallops
- Rope grown e.g. mussels

The numbers of fish of certain species and size that can be caught have numbers controlled by quotas set by the EU. When fish are **farmed**, they are raised in tanks or enclosures in rivers or lakes or in cages in the sea e.g. salmon, carp and trout.

## Gathered food

This is also called foraging. Foods that can be gathered are edible mushrooms, wild herbs, fruits and seaweed. Plants need to be at the right stage in their life cycle to be harvested and this is when they are at their best i.e. flavour, colour, texture, freshness and nutritional value.



**Secondary processing:** primary processed foods are either used on their own or mixed with other foods and turned into other food products. Examples of processed foods are:

Wheat into flour (milling)

Milk on collection: chilling, pasteurisation, homogenisation. This can then be used for cheese preparation, cream, butter and yogurt.

Fruit and vegetables e.g. freezing; preserving (jam, marmalade, chutney, sauces, pickles, canned)