

3º ESO

THE PRIMARY SECTOR



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1. CROP FARMING

1.1. FACTORS

Farming of agricultural raw materials is dependent on both **nature-related factors and human factors**. These factors explain why crops are limited to some regions or why it is more or less difficult for them to develop in other areas.

NATURE-RELATED FACTORS

The **climate** – which has certain amounts of humidity, rainfall, sunshine, etc. – affects how plants grow. The density and fertility of the **soil** are also important. For example, rocky soil is not suitable for farming, whereas sedimentary soil is ideal. **Relief** also has an effect: high areas and **steep slopes**¹ are less suitable for farming than plains and lowland areas.

HUMAN FACTORS

In addition to nature-related factors, **human factors** are also relevant. The most important of these are related to technological development, which helps overcome natural conditions:

- **Mechanisation** of farm work. These days, in just a few hours, one person with a combine harvester can gather as much as it would take an entire group of people several days to harvest on a non-mechanised farm.
- Modern **sprinkler**² and drip **irrigation** systems make it possible to reduce water consumption. Traditional irrigation involved flooding the farmland.
- In areas where the climate is not very suitable for agriculture, **greenhouse** farming makes it possible to use water more efficiently in dry areas or to create warm environments in cold areas.
- **Chemicals** are used to make the soil more fertile. Livestock excrement, or **manure**³, was traditionally used as fertiliser.
- **Biological techniques** make it possible to fight parasites that affect crops. They can also make genetic improvements to species, for example, creating cereals that contain more grain and less **chaff**⁴

¹ a very inclined portion of ground.

² a device used to water plants.

³ waste material from animals used for fertilising soil.

⁴ what remains of a cereal, such as wheat, once the grain is separated.

TRADITIONAL AGRICULTURE

The economies of **developing countries** are dominated by traditional agriculture, with limited mechanisation and low productivity. In these countries, there is very little commercial agriculture. It is largely limited to **subsistence** farming and **self-consumption** by the farmer and their families.

MECHANISED AGRICULTURE

In contrast, agriculture in countries with **developed economies** is highly mechanised and productivity is high. The objective is large-scale commercial production. This type of agriculture has evolved since the second half of the 20th century, in a process known as the 'Green Revolution'.

1.2. TYPES OF CROP FARMING

There are many different types of farming techniques. The most important are:

- **Dry and irrigation farming.** In dry farming, crops are watered exclusively by precipitation. In irrigation farming, water is brought from aquifers, rivers and reservoirs using a **costly** system of channels. This makes it possible to obtain higher yields than dry farming.
- **Intensive and extensive farming.** In extensive farming, land is left fallow. In other words, it is left uncultivated for a year to allow it to regenerate. Crop yields depend on investment in mechanisation, fertilisers, etc. In intensive farming, the land produces very high yields: it is made to produce several crops a year by using irrigation, greenhouses and fertilisers.
- **Polyculture and monoculture.** In polyculture, agricultural areas are divided into a number of plots. Different species are cultivated on these plots. This is the typical system in low-productivity traditional agriculture, where self-sufficiency is the main type of farming. By contrast, monoculture is highly specialised, with a single product being planted over a large area. This method is commonly used on tropical plantations of coffee, bananas, tea, etc., or in the extensive dry farming of crops such as grapes and cereals. Crop yields in monoculture depend on mechanisation and technological development.

2. LIVESTOCK FARMING

2.1. FACTORS

Traditionally, raising animals has been most important in areas where **physical factors** make farming difficult:

- In **cold and high areas** such as mountain ranges and high plateaus, where low temperatures and the availability of good **pasture**⁵ make livestock farming more profitable.
- In **semi-desert** and some **desert areas**, where livestock farmers move around constantly in search of limited pasture and available water.

One of the most important human factors is population density. Traditional livestock farming requires less labour than agriculture. As a result, in areas of the planet where farming is possible the population is limited in size, such as the Pampas in Argentina, livestock farming has been more common.

In the past, livestock farming complemented agriculture in flat, populated regions with temperate climates. In these areas, pastureland was simply set aside in order to guarantee the production of meat, organic fertiliser for crops and **draught animals**⁶.

But the Green Revolution changed this situation. Animals can now be given feed and fodder thanks to high agricultural production. The existence of feed means that livestock do not necessarily have to depend on pasture. There have also been technological advances, with improvements in veterinary care for livestock. Farms have also implemented improvements.

2.2. TYPES OF LIVESTOCK FARMING

In extensive livestock farming, the farmer leads the livestock to meadows and pastureland so the animals can graze⁷ freely. There are different types:

⁵ a field covered with grass that animals can eat.

⁶ an animal that is used to pull heavy loads. Draught animals like oxen, mules and horses were once used to plough the land. Today, this practice only survives in countries with traditional agriculture.

⁷ feed on grass in a field.

NOMADIC FARMING

- Livestock move from place to place based on the availability of pasture and water.
- Most common in developing countries.

SEASONAL MIGRATORY FARMING

- Livestock move around in search of food based on the season, for example in summer they remain in cool areas.
- Becoming less common in developed countries.

NON-TRANSHUMANT FARMING

- Livestock do not have to travel long distances to feed.
- Most common in developed countries.

Intensive livestock farming consists of stabling the animals on farms, where they are given feed, and the living conditions are monitored by vets. In intensive livestock farming, yields essentially depend on the investment made in obtaining the animals and their veterinary care. As a result, productivity is higher in developed countries.

In contrast to extensive livestock farming, intensive farming requires more labour, however it produces very high yields⁸ in exchange. Because intensive livestock farming requires a significant investment, it is more common in developed countries.

3. FORESTRY

3.1. FACTORS

Forestry is dependent on the presence of trees, whether in forests or on plantations. The type of forest in a given area depends on the local **climate**, the quality of the **soil** and the **relief**.

Traditionally, **wood** was used as fuel. In developed countries, this practice has almost disappeared as a result of technological change. It was also a building material, a use which has decreased a great deal with the availability of other materials such as cement, metals, glass, etc. We also obtain **cork** and **resin** from trees.

The use of wood as a manufacturing material is very much determined by its **financial profitability**. It takes years for a tree to grow, reducing its profitability. Because of this, logging wood for the **paper** and **furniture** industries has expanded in tropical and boreal regions,

⁸ the amount of something produced, typically of raw materials.

where there are large areas of forest, and where tree species grow more quickly. In temperate zones, like Spain, tree plantations have been very successful.

The exploitation of forests and rainforests on an industrial scale causes serious deforestation and soil erosion problems. This has led to growing **public awareness**, a factor which works in favour of preserving and regenerating forests.

3.2. TYPES

Traditional exploitation of wood from forests was based on three basic procedures:

- **Clear-felling:** An entire area of the forest is eliminated. It is then replanted or left unused to allow it to regenerate. Sometimes this is done to create land for crops or pasture.
- **Thinning:** A limited number of the trees in a forest are cut down. This helps the remaining trees to grow better.
- **Pollarding:** This involves periodically **pruning**⁹ only the branches of the trees. The tree itself survives and continues producing wood. Species of tree used for pollarding include beech, oak, poplar, chestnut, etc.

Modern forestry uses basically these same processes, only mechanised and with planned management. This increases productivity, reduces the environmental impact, or both of these at the same time

In the 20th century, large **plantations** of fast-growing trees began to appear in order to supply wood for industry. The most common plantation species are the eucalyptus, Canadian poplar and plane tree.

4. AGRARIAN LANDSCAPES

4.1. ELEMENTS

The transformation of the natural environment produces human-made landscapes. In relation to primary sector activities, we can identify the following landscapes:

- **Rural landscapes:** all non-urban landscapes.
- **Agricultural landscapes:** limited to activities related to farming.

⁹ cutting off or trimming branches from a plant, a tree or a bush to encourage growth.

- **Agrarian landscapes:** all primary sector activities and the human habitat that develops there. There are various types of agrarian landscapes, which can be identified based on different elements.

Plots

Plots are pieces of land. For example, cultivated land and areas used for livestock are divided into plots. When we talk about **agrarian plots**, it is important to consider:

- Their **shape**: whether they are uniform or irregular (rectangular, round, etc.). Irregular plots are typical in regions that have been farmed for a very long time or which have **rugged**¹⁰ relief, such as along the Mediterranean coast. Uniform plots are common in areas that have been ploughed more recently, such as in the central part of the United States. They are also found where the government has redistributed old plots, which happens when land is **consolidated**¹¹. Land consolidation involves grouping small plots of land into larger properties in order to make farming easier.
- Their **size**: they may be medium-sized, very large (estates), or small (smallholdings).
- Their **boundaries**: whether they are open (open fields) or closed (bocage). Open fields are typical in Central Europe. They are separated by a narrow uncultivated strip of land. Closed fields are more common in Atlantic Europe. They are separated by walls or **hedgerows**¹² made up of trees and shrubs.
- **Livestock** usually grazes in **meadows**, small plots of pastureland with good quality grass and plants, or on grazing land, large plots with a wide range of pasture of different qualities, such as uncultivated land.

Types of crops

The predominant plants identify a landscape by their colour and appearance. We can see this in areas of pastureland and cultivated land. On cultivated land, we can distinguish between two basic types of crops:

- **Annual or herbaceous**, such as fields of cereals: wheat, rice, barley, etc.
- **Perennial or woody**, with plants that live for several years, such as olive trees, grape vines, fruit trees and trees to supply wood.

¹⁰ wild, rocky, irregular.

¹¹ well-established

¹² a line of bushes and trees that grow along the side of a row.

Rural environment

The rural environment includes **population centres** in rural areas, along with their homes and buildings (storehouses, haylofts, barns, etc.).

The form which a rural environment takes is determined by the physical conditions of the location, the main types of crops and livestock, and the characteristics of the plots.

Settlement in rural environments can be **dispersed**¹³, if the inhabitants live isolated from each other, such as in farmhouses or country houses, or **concentrated**¹⁴ in villages of different sizes.

4.2. TRADITIONAL AGRARIAN LANDSCAPES

In countries with **less developed economies**, where agricultural activities are a very important part of the economy, traditional agriculture and livestock farming are often practised. There are various types of traditional agrarian landscapes.

Landscape produced by shifting cultivation or slash-and-burn farming

This is a primitive farming system:

- The population forms **small communities** who live in villages.
- Farmland is created using **slashand- burn** methods, in which the existing vegetation is burned at the end of the dry season. After it is burned, the land is turned over with **hoes**¹⁵ or sticks in order to **fertilise** the soil with the **ashes**.
- **Livestock farming** is extensive, and **forests** exist alongside crops.

Landscape produced by extensive dry farming

This is based on a combination of farming activity and extensive livestock farming:

- Part of the land is left **fallow**. Livestock graze on the land, fertilising the soil with their **manure**¹⁶. In other areas, crops are alternated or rotated, restoring fertility to the soil.
- **Rural communities** are permanent and usually live in concentrated settlements.
- There are **forest** reserves.

¹³ something that is spread over a wide area.

¹⁴ brought to a single point.

¹⁵ a gardening tool with a short metal blade that is used to weed.

¹⁶ waste material from animals used for fertilising soil.

Landscape produced by monsoon-based agriculture with paddy fields

This type of agriculture combines irrigation farming with extensive livestock farming:

- **Paddy fields**¹⁷ occupy **deltas**¹⁸ and plains. Terraces are created on mountains.
- The plots are planted with rice, and flooded using **irrigation systems**. **Rural communities** are grouped in concentrated settlements.
- There are **forest** reserves.

4.3. DEVELOPED AGRARIAN LANDSCAPES

Developed agrarian landscapes are the result of the innovations of the Green Revolution. However, production varies depending on investment in **cutting-edge technology**¹⁹ and the continued use of traditional practices.

Landscape produced by plantation agriculture

- **Plots** are typically large, **open** estates crossed by interior roads.
- Companies, usually foreign, impose one type of **monoculture**, with crops intended for export (coffee, bananas, cocoa, pineapples, etc.).
- **Settlement** alternates between concentrated and dispersed. **Livestock farming** is not very important.

Landscape produced by extensive agriculture

- **Plots** are primarily large geometric estates, forming uniform agrarian landscapes with **open fields**.
- The **crops** – cereals, industrial crops and fruit – are cultivated using dry and irrigation farming.
- **Settlement** is mainly dispersed. Extensive **livestock farming** occupies vast areas of pastureland, and livestock farms are common.

¹⁷ a field where rice is planted, with heavy irrigation.

¹⁸ rea of triangular, low and flat land, where a river splits into some smaller rivers.

¹⁹ something that is very modern, highly advanced or pioneering.

Landscape produced by mechanised mediterranean agriculture

- Large estates exist alongside small, irregular **plots**.
- The land alternates between **open** and **closed fields**, particularly in irrigated areas.
- The practice of **fallow** survives, and irrigation is used in fertile areas. Dry-farming **crops** are cereals, grapes and olives. Fruits and vegetables are grown in irrigated areas.
- **Settlement** alternates between concentrated and dispersed. Grazing land for extensive **livestock farming** exists alongside farms. There are forest and meadow reserves.

5. FISHING

5.1. FACTORS

Fishing activity takes place in waters which offer suitable conditions for underwater life. Although it is found in **freshwater** areas such as rivers, lakes and reservoirs, most fishing activity takes place in **ocean waters**. The best fishing grounds in seas and oceans are found in relatively **shallow**²⁰ waters above continental shelves and where **warm and cold ocean currents** meet. Here, large concentrations, or **shoals**²¹, of fish are common.

5.2. TYPES

Commercial fishing

The aim of this modern form of fishing is the large-scale sale of the catch. It is common in developed countries. In commercial fishing, there are also different techniques for catching the fish. Two are especially worth noting: trawling and electrofishing with suction.

Aquaculture

In recent decades, aquaculture has become increasingly important. This involves raising fish, crustaceans, molluscs and algae in facilities that include **rafts**²² for farming mussels to ocean and river fish farms used to grow algae, trout, gilthead, sea bream, turbot, etc.

²⁰ not deep.

²¹ a large group of fish.

²² a floating platform made of wood or other unsinkable materials.

Traditional fishing

This type of fishing uses traditional fishing tackle such as nets, harpoons, hooks and fish pots. Traditional ocean fishing is found in less developed countries. Its main purpose is **self-consumption** or to supply **local markets**.

5.3. TECHNIQUES

Coastal fishing: This is done in large bodies of fresh water or in the ocean near the coast. Boats go out for one or two days. They are small and use nets and paternoster lines, long fishing lines with several branches ending in a hook. This type of fishing does not employ a lot of technology.

Deep-sea fishing: This is done exclusively in the open sea by fleets equipped with sonar and radar to detect shoals of fish. The ships are very large and spend months fishing at sea. The catch is transported on factory ships, which are equipped to sail for long periods of time and to process and freeze the fish.

Trawling: This method uses large nets in the shape of a funnel. They are dropped by fishing boats known as trawlers, which drag the nets through the water.

Electrofishing with suction: A device generates electrical discharges in the water to direct fish towards the fishing boats. They are equipped with a large funnel which sucks them up.

Harpoons are thrown at the prey, and the tip stays hooked in the body. Today there are modern harpoons for hunting whales that are launched from cannons.

A **fish pot** is a funnel-shaped trap. Bait is placed inside to attract the catch. Once the prey has entered the pot, it cannot get out.

A **hook** is a type of tackle used in pole fishing. The hook is attached to a fishing line or string. A piece of bait is put on the hook to attract fish and catch them.

Shellfishing involves catching molluscs and crustaceans along the coast or in nearby waters. This is also practised on a commercial scale.