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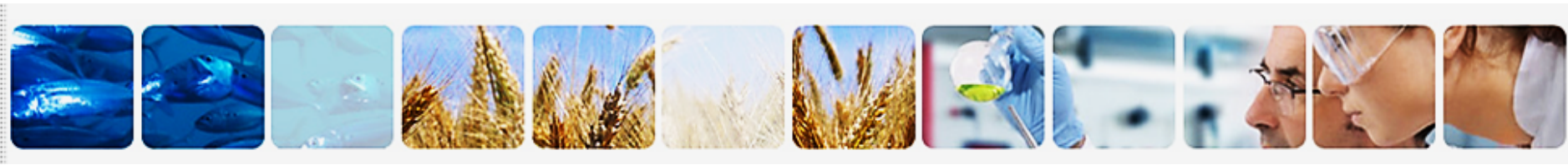


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Education

Phase 3

Sustainable food production

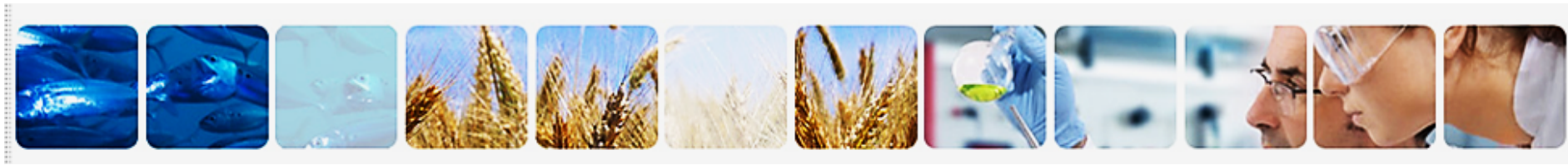


## Objectives



To be able to define factors contributing to sustainable food production and processing.

To recognise how agriculture, farming and fishing impacts on the environment.

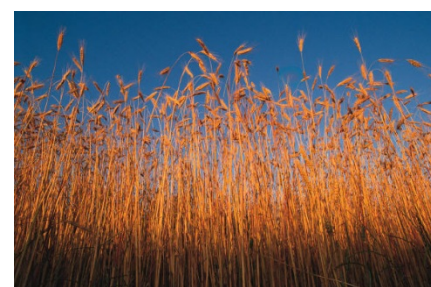
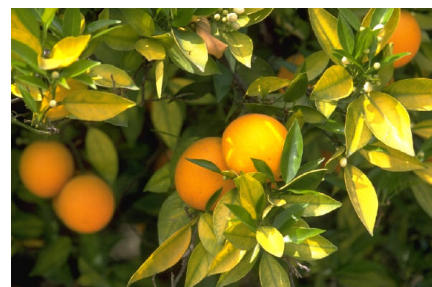


## Introduction

Agriculture, livestock and fish farming are important to the culture of Europe.

Europe has a wide range of natural environments, climates, fishing and farming practices.

Many different agricultural, food and drink products are grown and processed throughout the EU.





## Agriculture

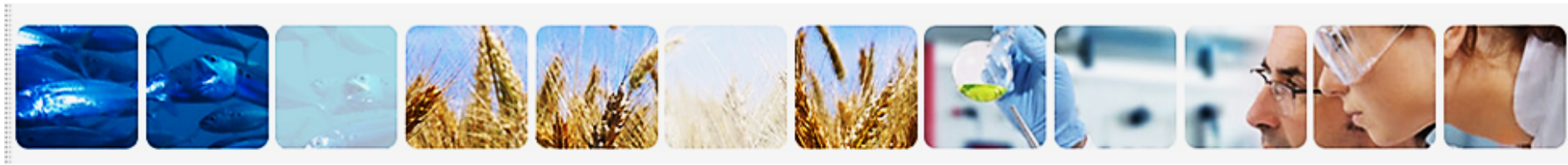


Climate, geography and geology influence how the land is used to grow food and farm animals.

Some regions can use almost all the land for agriculture.

Other regions have a harsh climate, lots of forest or high mountains which means that very little land can be used.





## Sustainable agriculture



What is it?

Sustainable agriculture has been defined as an integrated system of plant and animal production that will last over the long time, to satisfy human food needs and enhance natural resources. It uses non-renewable resources efficiently; sustains the economic viability of farms and enhances the quality of life for farmers and society as a whole.

It is the practice of farming using principles which respect ecology and conserve natural resources.





## Sustainable farming

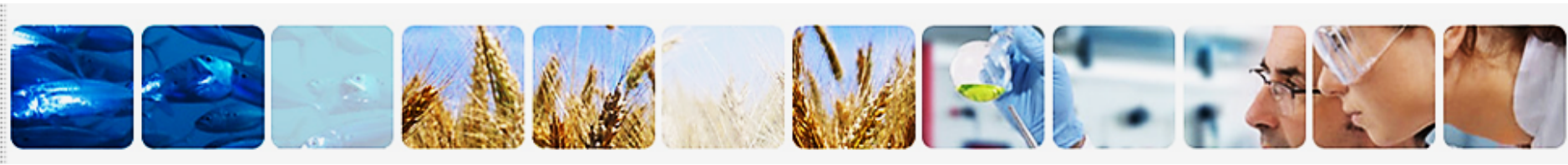
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There are many ways to improve the sustainability of farming. These vary from country to country, region to region.

These include:

- **pest management** – reduces health and environmental risks;
- **rotational grazing** – animals are moved regularly to new pasture to allow fields to regenerate;





## Sustainable farming

- **soil conservation** – helps prevent loss of soil due to wind and water erosion;
- **water conservation** – helps improve water quality and protects wetlands;
- **cover crops** – growing plants like clover after harvesting helps weed and erosion control and improves soil nutrients and soil quality;





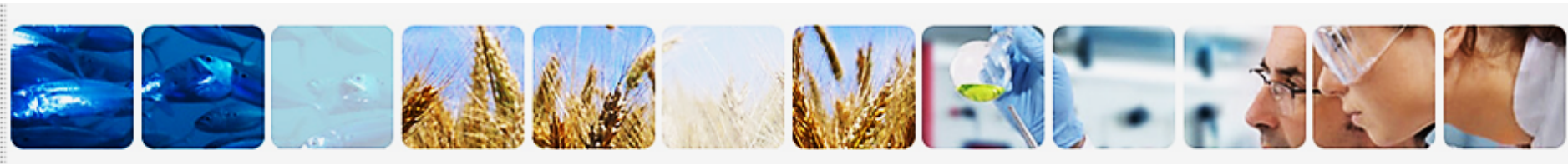
## Sustainable farming



- **nutrient management** - improves the soil and protects the environment;
- **marketing** – raises the profile of sustainable farming practices and increases consumer awareness;







## Sustainable farming



- **crop/landscape diversity** - growing a variety of crops reduces risks from extremes in weather or crop pests; it also helps with soil conservation, wildlife habitat and increases the number of good insects.





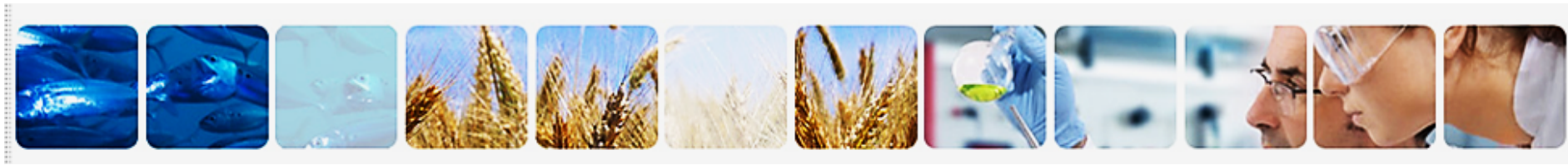
## Aquaculture

Aquaculture is the farming of fish, shellfish and aquatic plants like algae.

It is one of the world's fastest growing food sectors.

In Europe, aquaculture accounts for almost 20% of fish production.





## Fishing

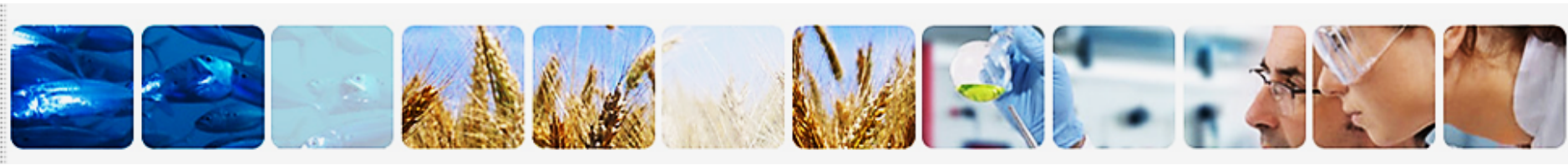
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The Common Fisheries Policy (CFP) is the EU fisheries policy.

It sets out the following:

- rules to ensure Europe's fisheries are sustainable and do not damage the marine environment;
- ways to enforce these rules and punish offenders;
- support for the development of EU aquaculture (fish, seafood and algae farms);
- help for producers, processors and distributors to get a fair price for their produce.



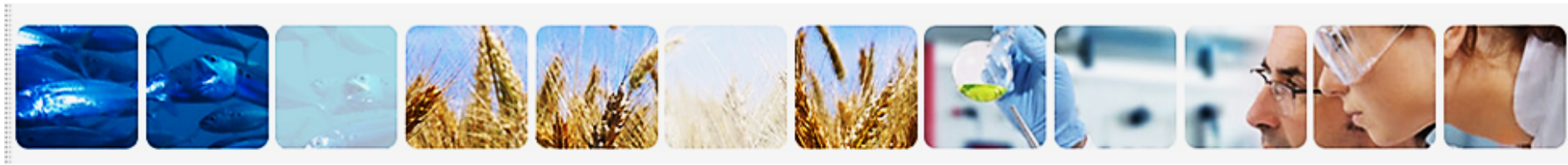


## Sustainable fishing

There are three types of fishing rules:

- **fishing effort limitations** - restrict the size of the fleet and the amount of time it can spend fishing;
- **total allowable catch limits** - restrict the quantity of fish that can be taken from the sea;
- **technical measures** - regulate how and where fishers can fish.





## Aquaculture in the future

A new system called **offshore mariculture** is being developed. The fish cages are submerged in deep sea water off shore reducing any impact to the ocean floor.

It is technically difficult because of the depth of the sea, weather patterns and the currents in the sea.





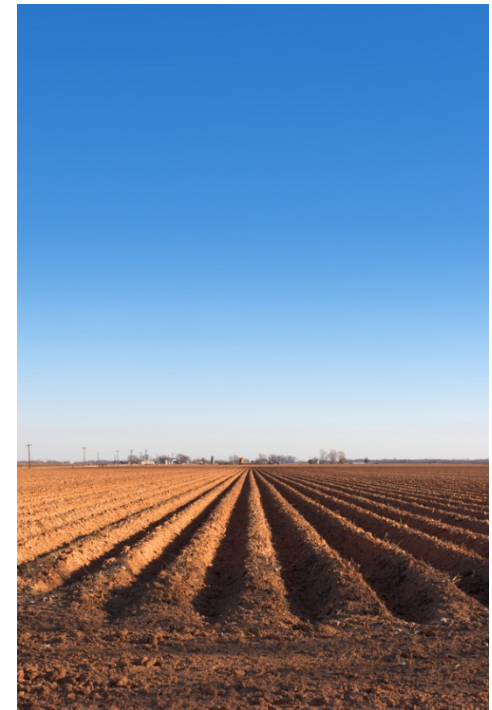
## Other factors affecting food sustainability



### Climate change

There is now increasing evidence about climate change. Concerns for European agriculture and farming are:

- decreasing average annual and seasonal rainfall will be a serious problem in many regions;
- causing more sudden heatwaves, droughts, storms and floods across the EU.





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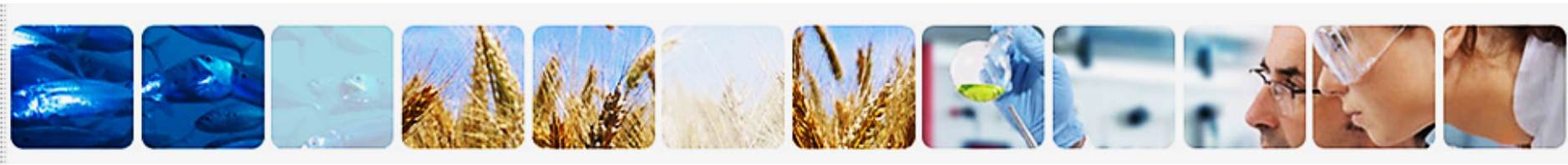
## Food security

Food security is one of the major challenges worldwide in the years ahead.

Global food demand forecast to rise by 70% by 2050 (FAO).

Food production will have to be maintained and capacity increased to help meet demand.





## What is food security?

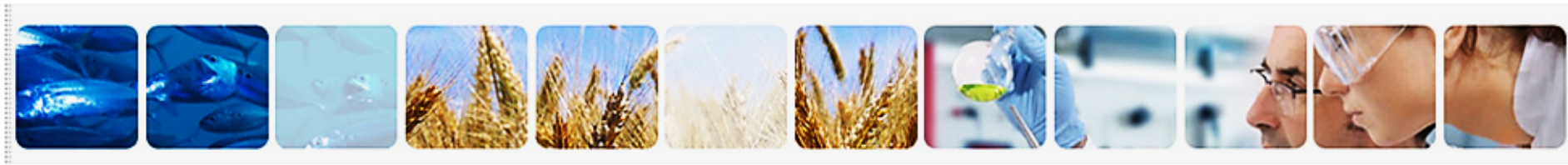
There are different ways to define food security.

It means that you:

- have food on your plate today;
- have confidence that there will be food on your plate tomorrow, next week, month and in a year.







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Food security includes:

- **availability:** is there enough to go around?
- **access:** can it be reached efficiently?
- **affordability:** can it be bought at a fair price?
- **quality:** is the food edible?
- **nutrition:** is the food part of a balanced diet?
- **safety:** could it harm health?

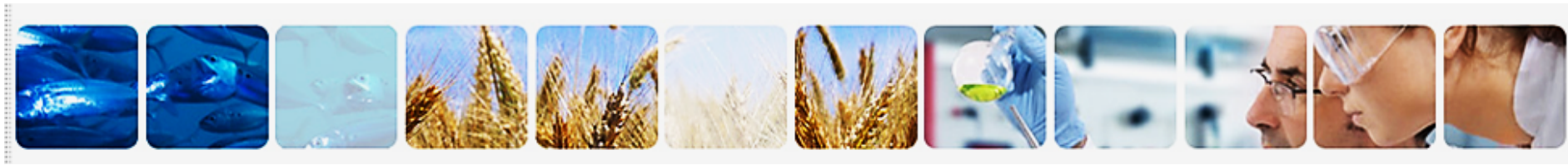
Therefore, food security is about having access to affordable, safe and nutritious food, today and tomorrow.



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The main challenge in the future is not only to produce more, but also to do this in a sustainable way.





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## **Foresight report – The Future of Food and Farming: Challenges and choices for global sustainability**

Over 400 experts and stakeholders from about 35 countries were involved in the development of this report.

The report identifies the key drivers of change affecting the food system.  
Government Office for Science (2011)





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