AGRICULTURE AND THE CHALLENGES OF CLIMATE CHANGE

Did you watch the TV weather forecast this week? Most of us decide what to wear according to the forecast. For the farmer, the weather really matters, as agriculture is more weather and climate dependent than many other sectors.

1. **Circle any of the adverse climate-related events that have taken place and affected farming and food production in your country in the last decade.**

Floods	Winter storms	Falling crop yields, crop failures	Heat spells, lack of summer rain
Rising sea levels	Change in growing season	Soil erosion	Animal health and welfare issues
Drought	Habitat loss	Water shortages	Increase in pests and alien species

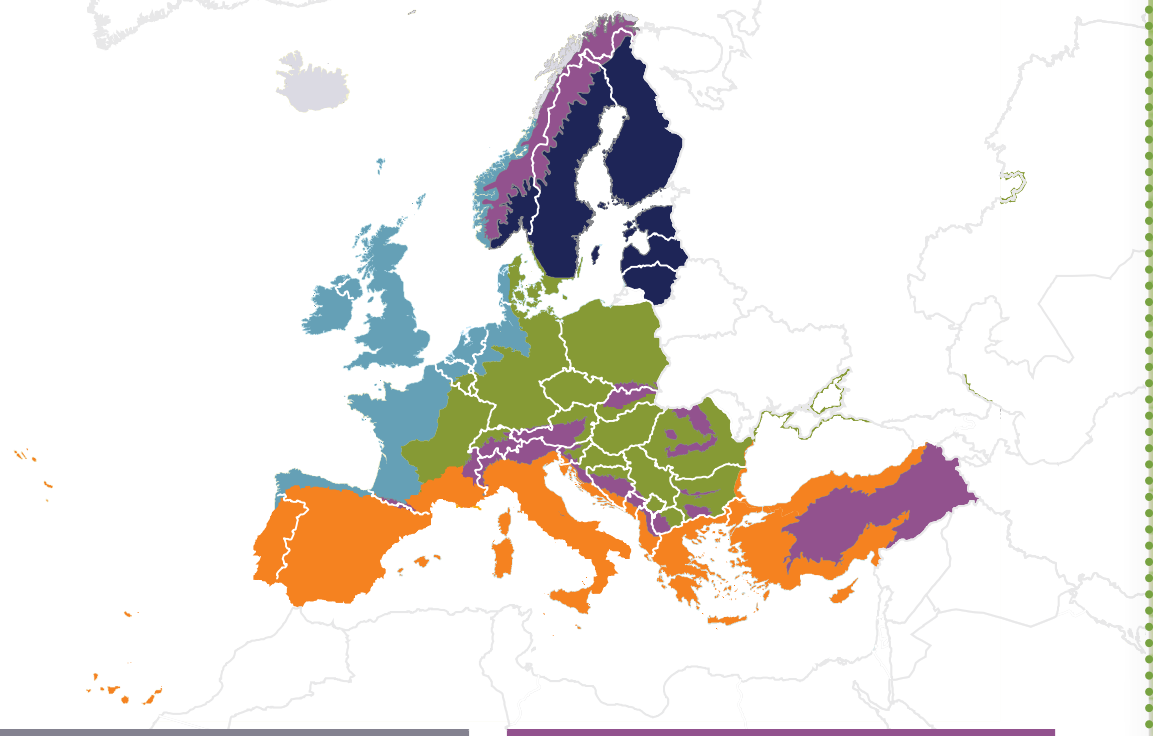
2. With a partner list some of the weather and climate events (see Exercise 1) that can impact the different elements of farming below.

AGRICULTURE IS IMPACTED BY CLIMATE CHANGE				
Crops				
Livestock				
Soil and landscape				
Groundwater and sea level				
Seafood and shellfish				
Biodiversity and ecosystems				
Farmer, family and income				

It may be interesting to also think about how climate change affects EU regions differently. What are likely to be the main impacts for farmers where you live?

See the map on the next page for more information on how climate change is affecting the EU.

The impact of climate change in Europe



Arctic
Temperature rise much larger than global average
Decrease in Arctic sea ice coverage
Decrease in Greenland ice sheet
Decrease in permafrost areas
Increasing risk of biodiversity loss
Intensified shipping and exploitation of oil and gas resources

North-western Europe
Increase in winter precipitation
Increase in river flow
Northward movement of species
Decrease in energy demand for heating
Increasing risk of river and coastal flooding

Coastal zones and regional seas
Sea-level rise
Increase in sea surface temperatures
Increase in ocean acidity
Northward expansion of fish and plankton species
Changes in phytoplankton communities
Increasing risk for fish stocks

Northern Europe
Temperature rise much larger than global average
Decrease in snow, lake and river ice cover
Increase in river flows
Northward movement of species
Increase in crop yields
Decrease in energy demand for heating
Increase in hydropower potential
Increasing damage risk from winter storms
Increase in summer tourism

Mountainous areas
Temperature rise larger than European average
Decrease in glacier extent and volume
Decrease in permafrost areas
Upward shift of plant and animal species
High risk of species extinction in Alpine regions
Increasing risk of soil erosion
Decrease in ski tourism

Central and eastern Europe
Increase in warm temperature extremes
Decrease in summer precipitation
Increase in water temperature
Increasing risk of forest fire
Decrease in economic value of forests

Mediterranean region
Temperature rise larger than European average
Decrease in annual precipitation
Decrease in annual river flow
Increasing risk of biodiversity loss
Increasing risk of desertification
Increasing risk for fish stocks
Increasing water demand for agriculture
Decrease in crop yields
Increasing risk of forest fire
Increase in mortality from heat waves
Expansion of habitats for southern disease vectors
Decrease in hydropower potential
Decrease in summer tourism and potential increase in other seasons

3. The EU works to support farmers to take 'decisive action' on climate change by using water and soils more sustainably, to produce green energy and protect biodiversity. But where do you stand in regard to climate change and safeguarding the earth's resources? Let's play **take a stand!**

Place two posters, an 'I agree' and an 'I disagree' poster, on walls at opposite sides of the classroom. A volunteer reads a statement and each of you place yourself, in response to the statement, at either side of the room. The volunteer asks a few students from each part of the room why they stood there. Everyone is free to move location if convinced by the points raised, but must explain why they have been persuaded to move.

- To ensure we can feed future populations we need to focus more on sustainable production.
- Organic farming methods may be the most sustainable way of farming, but they won't be able to feed a world population of 9 billion by 2050.
- We need to grow food more efficiently rather than cut down trees and forests for agriculture.
- We should depend less on imported food and focus more on local farmers for food security.
- We need to eat more seasonally to participate in protecting the environment, despite not being able to buy certain fruit, like strawberries, all year round.