



ULST Timisoara
**Multidisciplinary Conference on
Sustainable Development**
30-31 May 2024



THE IMPACT OF CLIMATE CHANGES IN AGRICULTURE AND FOOD SECURITY

**TIBERIU IANCU, TABITA ADAMOV, GABRIELA POPESCU, LUMINIȚA PÎRVULESCU,
RAMONA CIOLAC, CLAUDIA SÎRBULESCU**

University of Life Sciences "King Mihai I", from Timisoara, Faculty of Management and Rural Tourism

Abstract: Agriculture provides food, services and resources and guarantees the livelihood of millions of people worldwide. In the EU alone, 22 million people are directly employed (part-time included) in the farming sector — up to 44 million people rely on the wider food sector (farming, food processing and retail/services). Agriculture is one of the most climate-dependent socio-economic sectors, since most of the agriculture productivity and quality are directly dependent on different climatic factors. Climate change is already affecting agriculture, with effects unevenly distributed across the various regions of the world and within Europe.

Introduction

- ❖ Climate change affects agriculture in a number of ways. Changes in temperature and precipitation as well as weather and climate extremes are already influencing crop yields and livestock productivity in Europe. Weather and climate conditions also affect the availability of water needed for irrigation, livestock watering practices, processing of agricultural products, and transport and storage conditions. Climate change is projected to reduce crop productivity in parts of southern Europe and to improve the conditions for growing crops in northern Europe. Although northern regions may experience longer growing seasons and more suitable crop conditions in future, the number of extreme events negatively affecting agriculture in Europe is projected to increase.

Material and method

- ❖ According to FAO estimates (2008) the global population of six billion in 2030 will rise to nine billion in 2050. This also means an increase in the expected demand for food by 50 % for 2030 and by twice as much for 2050. The only way of satisfying this demand, as well as the demand for animal feed, fibre fuels and biofuels, is sustainable food production, which will become more difficult due to climate change.
- ❖ The effect of global climate change on food production will probably be changes in precipitation periods as well as in the distribution and extent of storms; in addition, extreme weather events will increase. If we fail to satisfy the rising demand through sustainable production methods, crop failures will lead to exorbitant price increases.

Results and discussions

- ❖ Climate impacts have led to poorer harvests and higher production costs, affecting price, quantity and the quality of farmed products in parts of Europe. While climate change is projected to improve conditions for growing crops in parts of northern Europe, the opposite is true for crop productivity in southern Europe. According to projections using a high-end emission scenario, yields of non-irrigated crops like wheat, corn and sugar beet are projected to decrease in southern Europe by up to 50 % by 2050. This could result in a substantial drop in farm income by 2050, with large regional variations.
- ❖ Climate change has already negatively affected the agriculture sector in Europe and this will continue in the future. Changes in temperature and precipitation as well as weather and climate extremes are already influencing crop yields and livestock productivity in Europe. This can lead to abandonment of climate-disadvantaged farmlands in parts of southern Europe.

Is the agriculture sector more vulnerable to climate change than other sectors?

- ❖ All economic sectors have been and will be affected by climate change. Agricultural production strongly depends on weather and climate conditions and this makes it one of the most vulnerable sectors. Changes in temperature and precipitation, as well as weather and climate extremes, influence crop yields and livestock productivity and in turn the agriculture income and cause significant economic losses in many European regions.
- ❖ Climate change has been found to have an impact on food safety, particularly on incidence and prevalence of food-borne diseases. Increased climate variability, increased frequency and intensity of extreme events as well as slow ongoing changes will affect the stability of food supply, access and utilization.

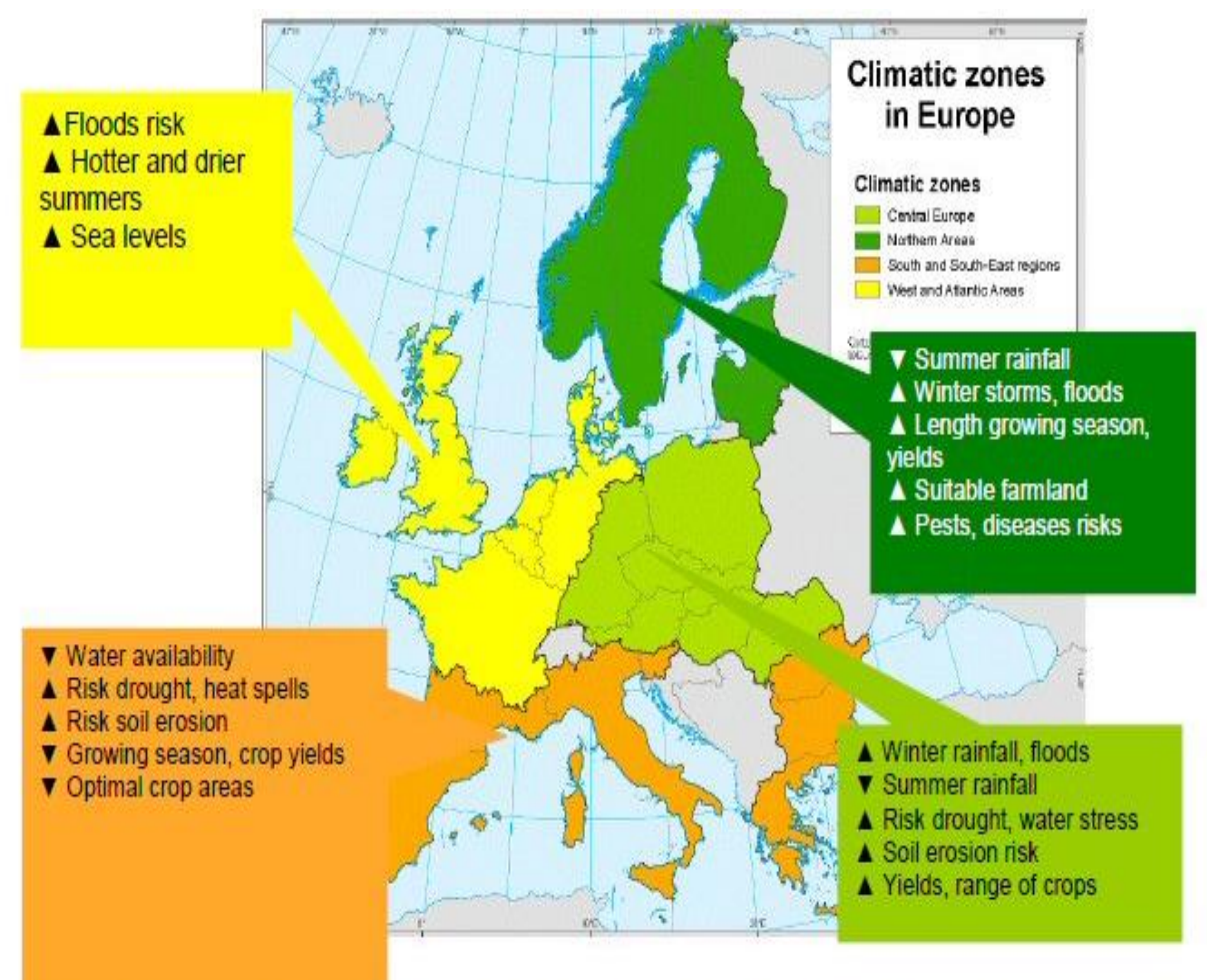


Figure 1. Climate change – Possible impacts on EU agriculture

- ❖ Climate change is already affecting Europe in various forms, depending on the region. It can for example lead to biodiversity loss, forest fires, decreasing crop yields and higher temperatures. It can also affect people's health. For instance, people can die as a result of heatwaves.

Conclusions

- ❖ Climate change can significantly affect food security in Romania and its surroundings, influencing the diversity of crops and their yield.
- ❖ Rising temperatures, changes in atmospheric fronts and precipitation dynamics may bring longer and more severe droughts to certain vital regions, affecting agricultural crops such as cereals, vegetables and fruits. For example, prolonged periods of drought in recent years have reduced the production of wheat and corn in certain counties, a negative impact on the national economy and agriculture. Also, climate change can influence the quality of the soil, creating additional difficulties for farmers in maintaining its fertility.
- ❖ The adaptation of these measures requires investments in advanced agriculture, the use of water resources and technologies to promote sustainable agricultural practices to cope without effective climatic conditions to ensure food security in the future of Romanian agriculture.