# ERA CAPS



# ERA-CAPS

Coordinating Action in Plant Sciences; Promoting sustainable collaboration in plant sciences through coordinating and funding excellent transnational research.

### About

ERA-CAPS is the European Research Area Network for Coordinating Action in Plant Sciences. Building on the ERA-CAPS ERA-NET that was supported by the European Commission's 7th Framework Programme until mid-2015, ERA-CAPS has now become a self-sustained network.

#### Aim and objectives

Plants are essential to human life. Directly or indirectly, plants produce most of the world's food as well as renewable sources of energy and materials. Past improvements in our knowledge of plant biology and agronomy have underpinned large increases in crop yield and enhanced access to a far greater diversity of food on a global scale.

The ERA-CAPS initiative aims at deepening and enlarging European cooperation in the area of Plant Sciences, which should significantly help plant sciences to address both current and future challenges in food and non-food crop production. ERA-CAPS aims to ensure the scientific understanding to revolutionise agricultural capabilities to deliver higher yields with lower inputs in a changing climate. The networks aims to contribute towards a more sustainable bioeconomy, environment and global food security.

The ERA-CAPS objectives are to foster the development and coordination of Plant Sciences transnationally and to further support a transnational Research Area of Plant Sciences.

## Challenges

With an exponentially growing population our planet is more than ever facing a unique challenge. Indeed, global demand for food is expected to have doubled by 2050, due to population growth and urbanisation. As many as 828 million people were affected by hunger in 2021 and almost 3.1 billion people could not afford a healthy diet (FOA, 2022). Globalisation will continue exposing the food system to novel political and economic pressures. Competition for land, water and energy will increase and the need to adapt and mitigate the effects of climate change will become crucial. In the meantime, crops may play an increasing role in the so called "green chemistry". It becomes therefore essential to ensure reliable production of safe food and renewable carbon supplies for green chemistry, without the use of excess land, energy, water, and chemicals.

High-quality, safe and reliable food and energy supplies demand high-quality, safe and reliable production methods. Current food production methods are utilising excess energy, water, pesticides and chemicals and will not meet the demands of a growing population. To guarantee food security (access to enough safe and nutritious food to ensure a healthy life for all) the world is in need of new ways to produce adequate and stable food supplies in an environmentally sustainable manner. The challenge for plant science is to provide sufficient food for modern society and a clean and safe environment in which to live. Sustainable, high-yielding crops, better use of plants as a renewable source of materials and a transition towards green energy are at the heart of the solution to these problems. Indeed, plants may be the only source of liquid fuels in an oil-free future.



#### Scope, goals and research topics

The scope of ERA-CAPS covers all areas of molecular plant science where the research answers fundamental biological questions of relevance to the development of the European and Global Research Area in molecular plant science, and allows maximum engagement of the plant science community. Alignment of the overarching themes with the Joint Programme Initiative for Food Security, Agriculture and Climate Change (FACCE-JPI) are of importance.

ERA-CAPS focuses on research in fundamental molecular plant science for the following themes:

- Food and Nutrition Security: research that contributes to the sustainable and secure supply of safe and nutritious food for an increasing global population. This includes yield optimisation, quality traits and nutrient use efficiency, amongst other research areas.
- Non-food crops: this theme includes research into crops (or appropriate models) where the end-use includes bioenergy or industrial biotechnology.
- Adaptation to a changing climate: research that addresses how plants can adapt, or be adapted, to grow in a changing environment.
- Biotic/abiotic stresses: this theme includes research into plant responses to either biotic or abiotic stress, or how plants contend with a combination of biotic and abiotic stresses.

These thematic areas have been used in the ERA-CAPS calls of 2013, 2014 and 2016 and remain relevant.

The fundamental research performed in ERA-CAPS contributes to the achievement of the practical and relevant goals described below.



ERA-CAPS goals. From: ERA-CAPS showcase report.