DIVERSify

Designing innovative plant teams for ecosystem resilience and agricultural sustainability

The four year Horizon 2020-funded DIVERSify project (2017-2021) aims to optimise the performance of crop species mixtures or 'plant teams' to improve yield stability, reduce pest and disease damage, and enhance stress resilience in agricultural systems. It focuses on improving the productivity and sustainability of European agriculture using an approach that has global relevance, learning from the experience of international researchers and stakeholders.

www.plant-teams.eu

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 727284

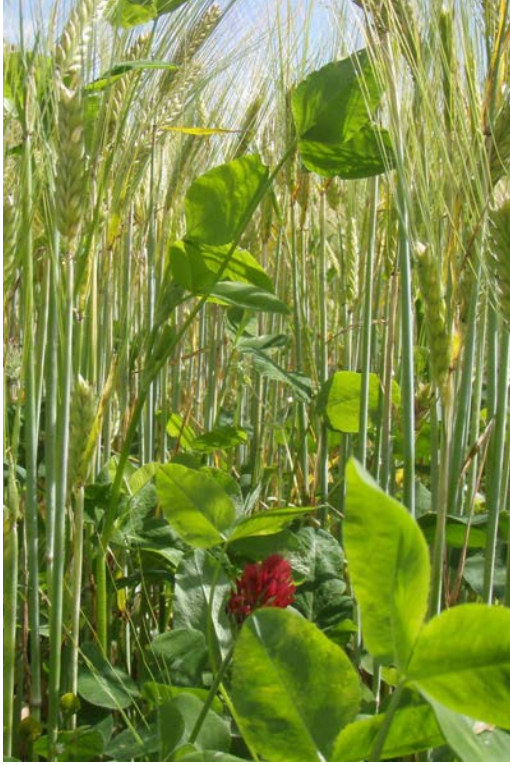
The challenge

A 60% increase in agricultural production is required by 2050 to feed the growing global human population. Crop yields achieved post-1950, through farming inputs and crop breeding advances, are now starting to plateau, and there is an increasing incentive to produce food sustainably with fewer inputs.

To address this challenge, crop scientists must:

- Devise novel cropping systems for **farmers** to increase efficiency and reduce pollution
- Provide new knowledge and tools for crop **breeders** to develop suitable cultivars, and
- Provide specifications for **agronomists** to manage these cropping systems.

Increasing the diversity of crop systems offers a means to enhance and stabilise crop yields. Species-rich systems often show higher productivity and resource efficiency than monocultures, with greater resilience to environmental stress.



Our goals

DIVERSify will use ecological principles to understand the plant traits and mechanisms that promote productivity in cereal-legume and species-rich grassland systems across a range of environments and climatic conditions.
To provide a novel system for sustainable food production, DIVERSify will:

- **Bring together** European and international centres of research excellence, farmers, extension services, breeders and small companies
- **Enhance understanding** of how plant teams can contribute to yield stability, reduced yield losses and increased resilience against environmental stress
- **Identify important crop traits and cultivars** for plant teams, and work with practitioners in different geographic regions to promote crop breeding and management practices for plant teams
- **Produce tools** for farmers to support the adoption of plant teams.

Our approach

Adopting a multi-disciplinary approach, and learning from innovative farmers, we will:

- Work with stakeholders in farming systems in Europe, Africa and the Middle East to identify existing knowledge, innovations and best practices for plant teams
- Devise and test a novel ecological approach to identify mechanisms and traits that optimise the performance of plant teams in field experiments across Europe
- Produce scientific evidence for the effects of crop trait diversity on plant-plant and plant-environment interactions
- Develop existing and novel theoretical models to optimise plant teams
- Conduct participatory on-farm research with our innovative farmers to validate and demonstrate plant teams
- Develop agronomic specifications for plant teams, including farm machinery adaptations
- Devise a web-based and mobile-phone friendly decision aid for practitioners to select suitable plant teams in different regions and farm types
- Promote the adoption of successful plant teams into the future through knowledge exchange and communication.

The project is coordinated by the **James Hutton Institute (JHI, UK)** and the consortium comprises 23 EU and international partners, including research institutes, universities, commercial and not-for-profit organisations.

Partners:

The Organic Research Centre (ORC), UK
Linking Environment and Farming (LEAF), UK
Universitaet Zürich (UZH), Switzerland
Sveriges Lantbruksuniversitet (SLU), Sweden
Agencia Estatal Consejo Superior Investigaciones Cientificas (CSIC), Spain
Københavns Universitet (UCPH), Denmark
Universita Politecnica delle Marche (UNIVPM), Italy
ITQB Universidade Nova de Lisboa (ITQB), Portugal
Taskscape Associates Ltd. (TAL), UK
Saatzucht Gleisdorf GMBH (SZG), Austria
Stockbridge Technology Centre (STC), UK
Agroknow (AK), Greece
École Superieure D'Agriculture D'Angers (ESA), France
Landbrug & Fødevarer SEGES (L&F SEGES), Denmark
Universidad Politecnica de Madrid (UPM), Spain
Økologisk Landsforening (ØL), Denmark
Lantmännen Ekonomisk Forening (LEF), Sweden
Kenya Forestry Research Institute (KEFRI), Kenya
International Centre for Agricultural Research in the Dry Areas (ICARDA), Lebanon
Canaan Centre for Organic Research and Extension (CORE), Palestine
Westfälische Wilhelms-Universität Münster (WWU), Germany
Fertiprado Sementes e Nutrientes LDA (FSN), Portugal

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