Next generation variety testing for improved cropping on European farmland

H2020 European Project
TOPIC: **Innovations in Plant Variety Testing (SFS-29-2018)**
Project Co-ordinator: **Dr. Lisa Black (AFBI)**

Project details
UNITUS Team Leader: Roberto Mancinelli
UNITUS involved Department: Department of Agricultural and Forestry
Sciences (DAFNE)

Coordinator: Agrifood And Biosciences Institute (United Kingdom)
Other Participants:
- Agencia Estatal Consejo Superior de Investigaciones Científicas (CSIC) (Spain)
- ALMA MATER STUDIORUM - Università di Bologna (Italy)
- Consulai, Consultoria Agro Industriatrial Lda (Portugal)
- Crea-Consiglio Per La Ricerca In Agricoltura E L'Analisi Dell'Economia Agraria (Italy)
- Debreceni Egyetem - University of Debrecen (Hungary)
- Department Of Agriculture, Food And The Marine (Ireland)
- HORTA S.r.l. (Italy)
- ICARDA- International Center for Agricultural Research in the Dry Areas (Morocco)
- IP Pragmatics Limited (United Kingdom)
- Lesprojekt Sluzby Sro (Czech Republic)
- National University Of Ireland, Maynooth (Ireland)
- Origin Enterprises Public Limited Company (Ireland)
- Rsk Adas Limited (United Kingdom)
- Stichting International Soil Reference And Information Centre (Netherlands)
- The Agriculture And Horticulture Development Board (United Kingdom)
- The Secretary Of State For Environment, Food And Rural Affairs (United Kingdom)
- Tystoftefonden (Denmark)
- Universidad Politécnica De Madrid (Spain)
- Università degli Studi della Tuscia (Italy)
- University College Dublin (Ireland)

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The INNOVAR Project

InnoVar, Next-generation variety testing for improved cropping on European farmland, is a Horizon 2020 'Research and Innovation Action' project addressing the topic SFS-29-2018 'Innovations in plant variety testing'. Feeding an increasing global population in the face of global climate change is a challenge for the agricultural sector and governments alike. Developing new varieties with more desirable characteristics is critical, but so are their regulation. InnoVar aims to augment and improve the efficacy and accuracy of European crop variety testing and decision-making, using an integrated approach incorporating genomics, phenomics, and machine learning. Historic data will form the foundation of the InnoVar database which will be expanded with new and harmonised data generated from a trial series across Europe. Using wheat as a test crop, InnoVar will devise and demonstrate improved, efficient methods of:
• integrating new science into DUS and VCU testing processes,
• combining DUS and VCU characters, and
• incorporating variety information into decision-making on-farm.

InnoVar is a 4,5 years project under the Horizon 2020 SFS-29-2018 call. The project's consortium includes 21 partners across Europe. Variety trials testing Triticum durum and Triticim aestivum will take place in 15 locations, organised into five agro-climatic zones based on climate and location. Data from these trials will be used to create new variety recommendation tools. InnoVar will also develop a road map for the implementation of these new and improved approaches to other important crops, including perennial ryegrass and maize., which will revolutionise the variety testing community.

The INNOVAR Ambition

InnoVar will develop next generation plant variety testing by building tools and models that augment current practices capitalising on advances in genomics, phenomics, imaging technologies and machine learning. This project will unite will multiple industries, government bodies and stakeholders to make a significant contribution to feeding an increasing global population in the face of global climate change. The outcome of InnoVar will be new crop varieties with more desirable characteristics in a changing environment with modern testing and regulation systems that will protect plant breeders, consumers and farmers.

The InnoVar database, populated with historical and de novo genotypic, phenotypic and environmental data will facilitate model development and evaluation for revision of DUS and VCU processes. Innovative ways to measure DUS characters will be evaluated. VCU testing procedures will be revised and shaped to comprehensively address variability in growing conditions, stresses and management approaches. Processes for identifying optimally-adapted varieties and delivering information to farmers, end-users and stakeholders will be put in place.

InnoVar will focus on wheat initially, and apply the InnoVar approach to other major crops. Developments and advances achieved will also influence breeding processes. This project will take variety information to the next level in four ways:
– Providing information on new DUS and VCU characters and identifying synergies;
– Developing varieties with proven suitability for the various growing scenarios;
– Making this information available to farmers throughout the EU, and
– Disseminating the information in readily accessible and easily updated digital formats.

Cutting-edge science will be integrated with tried and tested DUS and VCU processes to deliver an invigorated EU variety evaluation system capable of delivering increasingly productive and more sustainable cropping to meet the challenges arising from population growth, food security and climate change.

EXPERIMENTAL LOCATIONS