

Legume-supported cropping systems for Europe

Project Newsletter 2

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Legume Futures brings together experiments and expertise from 18 partner organisations in 12 countries to assess and design legume-supported cropping systems. The research aims to reduce Europe's dependence on fertiliser nitrogen and imported plant protein. Legume crops also have biodiversity benefits.

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First Annual Consortium Meeting in Cordoba

Cordoba (Spain): All partners, along with members of the independent Scientific Steering Committee, attended the two-day first annual consortium meeting at the University of Cordoba in March. In addition to plenary sessions, key methodological issues were addressed in workshops.

Presentations from all partners showed how well the collection of data from existing field experiments was progressing. Plans were made for the cross-project assessment of environmental and economic impacts of different legume-supported cropping systems. The importance of the partners' expertise in agronomy and agricultural systems was emphasised. It was clear that the project needs to draw on this expertise through increased emphasis on case studies. The role of case studies, site data, and related Local Stakeholder Fora were discussed in detail.



Dr Rafael Lopez-Bellido presents the University of Cordoba's work on rotations of cereal, sunflower and legumes after the Legume Future's annual meeting.

Researcher profile – Dr Göran Bergkvist

Dr Göran Bergkvist at the Swedish University of Agricultural Sciences (SLU) is a good example of the agricultural research expertise at the heart of Legume Futures.

Göran has twenty years of experience in developing cropping systems in Nordic countries and brings a rich combination of teaching and research management work. He was educated at the SLU and the University of Missouri. A key theme of his work is the longer-term effects of cropping systems. His research has focused in particular on the use of legume cover crops and legume intercropping within cereal-based systems to reduce fertiliser use, greenhouse gas emissions, and nitrate leaching.



Dr Göran Bergkvist taking soil samples from one of the SLU's long-term experiments.

The SLU has an impressive range of long-term agricultural field experiments which have been initiated and maintained with great vision over the last 70 years. Following an international review in 2006, Göran now coordinates these experiments. "Long-term experiments are essential to studying the effect of legumes in cropping systems. We are delighted that our experiments, which were established with very differing questions in mind, are now being used to optimise the use of legumes across Europe through Legume Futures. Our experiments are especially useful in examining how the N fixed by legumes can be best retained for subsequent crops".

Through the participation of agronomists such as Göran Bergkvist, we are bringing together a great resource of data, knowledge and insight and focus it on the development of improved cropping systems, in this case in northern Europe.

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Case studies

Harnessing the agricultural knowledge and insights that partners have obtained from personal experience, interaction with farmers, and experiments such as those at the SLU is one of the main challenges in Legume Futures. We have increased emphasis on the development of our case studies to draw on the full breadth of qualitative and quantitative information partners have and the results of dialogue with farmers, breeders and the food/feed industry.

By analysing partners' research facilities and agricultural experience, we have so far identified 6 case studies that support the project. These have brought to light how the changes in national conditions, due to admission to the EU and changes to its CAP, have affected legume cropping and we have started to have some success in getting scientists to write down what they think, in addition to what they have been able to test. While these untested ideas can be formulated into testable hypotheses by the individuals themselves, they can also be integrated into larger questions in the project as a whole and provide the framework for, among other things, model crop rotations. So we really need to increase our efforts in case studies to link our knowledge base, stakeholder experience, and our research resources.

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Partner profile - The Università Mediterranea di Reggio Calabria (UDM) in Reggio Calabria

Legume Futures has a strong presence in the Mediterranean region with partners in Greece, Italy and Spain. Perhaps the partner that most typifies this commitment to regional crop development is the Faculty of Agriculture at the Mediterranean University of Reggio Calabria (UDM).

Calabria is one of the world's oldest agricultural regions and is typical of the western Mediterranean. The combination of teaching students from the region, international research, and close links to local agriculture provides a vibrant backdrop to research in Legume Futures.

Field research for Legume Futures is conducted at the University's Agricultural Experimental Station and also hosted at regional centres (Regional Agency for the Agriculture Development, ARSSA) and private farms.



One of the UDM's field sites in Calabria

Dr Aurelio Pristeri focuses on the monitoring of GHG emissions, Prof Antonio Gelsomino leads on soil studies and Prof Michele Monti leads on agronomy. Their close connection to farming in the region is the foundation of a holistic approach to developing cropping systems. The Calabrian Stakeholder Forum, helped by the regional extension service, connects the Legume Futures work directly with local agriculture. Education is important to the long-term impact and as part the University's doctoral programme, other Legume Futures partners have provided input into teaching programmes addressing greenhouse gas emissions from crops and related field technique to monitor N₂O efflux from agricultural soils. Antonella Scalise, a doctoral student at UDM, has made a study visit to the Scottish Agricultural College in Edinburgh to develop research techniques.

15 Local Stakeholder Fora established

Legume Futures is about assessing and developing cropping systems on farms across Europe. Partners do not work in an academic bubble or progress development only on the basis of data – we seek to draw on the local knowledge and expertise of farmers and others in the development process.

15 Local Stakeholder Fora have been established and these are yielding valuable insights into the challenges of developing cropping systems. All but two of these are based around existing contacts and dialogue. Two have a cross-European approach. A forum based around the German Agricultural Research Alliance (DAFA) work on developing a research strategy for legumes.



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