

Legume Futures – an assessment of impact

The Legume Futures project officially ended more than two years ago. The consortium continued working to complete the publication and dissemination of results. This final Newsletter provides an assessment of the outputs and their wider impact. It complements the impact assessment provided in the [Final Project Report](#) immediately after the project ended in 2014. To consider the project's achievements, it is useful to look back at the circumstances at the start in 2009. Net imports of soy and the EU's protein deficit had reached a peak of 44 million tonnes of soy equivalent (20% of the world production) in 2007. Imports declined to about 34 million tonnes in 2013, corresponding to 13% of world production then. However, European grain legume production during this period remained a very low level at about 1.6 million ha or 1.5% of the arable area until 2014. A turning point for production came in 2015 with a near doubling of the grain legume area to 2.7 million ha. Did Legume Futures have a role to play in this trend reversal and will this be sustained?



A grain pea crop ripening in the German state of Thuringia in July 2016: an example of expanded production in central Europe supported by European and national policies and research.

Policy

At the project start in 2010, Legume Futures was the only EU Framework Programme research project

focused on legume crops and therefore representing this area of agricultural science professionally and competently on the European policy stage was a priority. Public policy supported by evidence from the consortium has stimulated increased legume crop production. From the outset, the consortium recognised that European policymakers are important users of the research and absolutely vital to a reversal of the downward trend in legume production. Over the last 20 years the CAP has moved away from measures that impact directly on markets. Most payments are now 'decoupled' from production and increasingly linked to public goods, especially the environment. We therefore regarded the public-good effects of legumes, especially environmental effects, as critical to policy development. Two work packages focused particularly on policy: WP4 led by ZALF and WP5 led by DMB. Early on in the project, we established a dialogue with the European policy community and contributed directly to the policy debate leading to CAP reform in 2014. Support included briefing of EC officials in Brussels and participation in discussions with EU parliamentarians. Legume Futures provided the team (ZALF, LEI, SRUC (Christine Watson), Helsinki University and DMB) that delivered the official assessment of the environmental effects of legume crops that was used in the European Parliament.¹ Legume Futures therefore contributed to consensus in the policy community about the environmental effects of expanding legume production.

Policy on agricultural research has been a component the Common Agricultural Policy since its introduction in 1962. The current CAP greatly increases the focus on agricultural research as a foundation for technical development. The European Innovation Partnership in agriculture is particularly relevant. Complementing the focus on general agricultural policy, the Legume Futures participated actively in research policy development drawing in particular on research policy experience. The consortium contributed to all relevant consultations on

¹ Bues, A., Kuhlmann, T., Lindstrom, K., Murphy-Bokern, D., Preissel, S., Reckling, M., Stoddard, F.L., Topp, K., Watson, C. and Zander, P. (2013) The environmental role of protein crops in the new common agricultural policy. The European Parliament.

the direction of EU research. These responses are published [here](#). In addition, two consortium partners (Fred Stoddard in Helsinki and DMB) served the European Innovation Partnership Focus Group for [Protein Crops](#). Legumes are relevant to a wide range of policy areas beyond agricultural policy. Two areas are particularly important to the wider impacts: the nitrogen cycle and food consumption. The consortium supported the European Nitrogen Assessment and the subsequent work of the UNECE Task Force on Reactive Nitrogen. Our work in the Task Force's Expert Panel on Nitrogen and Food (DMB) made an [important research contribution](#) to the development of policy on food consumption and diet.

During the project it became clear that Germany was particularly active in developing relevant **national research strategy**. Through DMB and ZALF (J. Bachinger), Legume Futures contributed significantly to the German Agricultural Research Alliance (DAFA) Expert Group for developing a research strategy for protein crops² and through this, the wider German Protein Crops Strategy. Overall, the capability in European and national research and development programmes relevant to the legume production has increased and we are confident that Legume Futures played a significant role in this positive development. Considering the context, collaboration in Legume Futures has contributed significantly to the development of the **European Research Area**.

Science

The consortium has published a total of 41 peer-reviewed academic journal papers ([listed here](#)). They arise from two main areas of research work: partners' on-going site-based research work (WP1) and research integrating economic and environmental analysis. This work in particular has shown that the economic performance of legume crops is frequently under-estimated by farmers. Our analysis showed that more than half of published experiments show that the introduction of legumes into systems is economic at whole farm level. Our five regional case studies showed that legumes can support economically competitive cropping in many European situations. This has very important implications for the further development of legume-supported cropping systems: for policymakers, value chain developers; and farmers.

The consortium produced a wide range of other science outputs, including playing a major role in the organisation of the European Society of Agronomy Congress in Helsinki in 2012, led by F. Stoddard as ESA President. Conscience that the consortium's long-term wider impact depended on strengthening scientific and policy debate, more than 70 book

² DAFA Deutsche Agrarforschungsallianz (2012). The Legumes Expert Forum. Science, economy and society – making ecosystem services from legumes competitive. A research strategy of the German Agricultural Research

chapters, conference papers and other outputs [listed here](#) provide a good record of this activity.



Fred Stoddard chairing the first meeting of the EIP Agri Focus Group on protein crops

Education

Legume Futures directly supported a total of nine post-graduate researchers leading to six successful doctoral theses and four master theses. The relevant partners were SRUC, SLU, ZALF, AU, AUA and UDM. In addition to the formal research, the consortium provided a rich broader learning environment. All post-graduates were supported in participating in consortium meetings where they gained direct experience of wider research issues such as project management, policy relevance, and leading research for wider impact.

Commercial and supply chain development

A number of commercial and supply chain developments emerged during the project period. At the outset, Legume Futures was innovative in including soy as a legume crop. This was instrumental in reminding the research and policy community that soy has potential in Europe. Soy is now more widely recognised as a legume crop than just as another oilseed crop and analysis in WP4 showed that it is one of the most promising legume crop options in regions where it grows well. The consortium has supported value chain developers with scientific advice, particularly in developing soy. Local initiatives such as the Ground and Growth legume project in Finland emerged from the project. Since Legume Futures was initiated, the development of legume cropping has moved on from being the subject of traditional researchers' experimentation. Value chain developers have acquired practical experience with legumes grown in Europe and this is now a valuable asset to researchers going forward. This is considered in a special discussion paper [here](#).³

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³ Murphy-Bokern, D. and Watson, C. (2016). Looking Forward: a postscript to Legume Futures. www.legumefutures.eu



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