EIP-AGRI Workshop

'How to make protein crops profitable in the EU?'

REPORT

13 FEBRUARY 2015

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Europe has significant potential for growing profitable protein crops. Research is needed to increase yield and competitiveness. It is also necessary to share knowledge on the use of varieties and the application of the best practices available. The key to success is identifying the catalysts to do this and to develop markets for protein crops.

On 25 and 26 November 2014, 56 experts, including farmers and representatives from breeding, results of the EIP-AGRI Focus Group on 'How to grow competitive Protein Crops in the EU'. Most of the members of this EIP-AGRI Focus Group were also present in Budapest to share their findings.

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Needs of farmers and feed and food industry

A range of protein crops were discussed by the experts, who came from all over Europe: soybean, faba bean, peas, lupins as well as fodder legumes like alfalfa and clover. The feed industry stressed that they sell nutrients (digestible amino acids) instead of protein to their customers. So the ingredients that go into the feed which also come from protein crops need to have the desired quality to comply with nutritional needs. They said that soybean is widely available on the world market and is the most common source of protein. It has set a very high standard in a heavily competitive industry with low margins. Therefore the alternatives need to live up to this standard at competitive prices. The food industry is also confronted with reduced margins due to dropping prices following the economic crisis, and it is looking for high quality protein concentrates to develop new products. For farmers, the financial return is important. However, there are other reasons which contribute to farmers' decisions to grow protein crops, such as the benefits of including them in the crop rotation and the incentives given through programmes such as the CAP. Participants highlighted the fact that solutions will differ according to the perspective – either from the food or feed industries or from the farming sector. Equally, diverse agro-climatic and soil conditions in Europe largely determine which legume crops are most easily adopted.

Local and regional initiatives on protein crops

The meeting revealed some local and regional initiatives working to close the financial yield gap and to develop markets. On soybean, programmes like Danube Soya and the initiative of growing soybean in The Netherlands and Belgium were presented and they show good promise. In the UK, the market for faba beans increased both for the human food sector as well as for feed. Also competitive yields were produced. In France, the SOS Protein initiative is actively looking for local protein production and consumption and supply to markets, together with farmers and industry. They have enlarged their scope of alternatives to fodder and co-products from the biofuel industry. Some projects have been presented in the Framework research Programmes that have worked on the issue of protein crops in European agriculture.

Networking

This networking event gave the opportunity to exchange experiences among several regional initiatives and stakeholders (from breeders to end users). The **EIP-AGRI website** is also available as a platform to continue this exchange of information and cooperation opportunities. The **Operational Groups** could also be an important instrument to speed up the learning curve, e.g. on cropping systems or variety choice. It was noted that this knowledge development shouldn't be limited to the individual Member States; exchange between the different climatic regions across Europe will be essential. Five currently available options for CAP funding of cross-border Operational Groups, through Rural Development Programmes, can be found under section 4.5 of the **Guidelines on Programming for Innovation and the Implementation of the EIP for Agricultural Productivity and Sustainability**. Thematic networks within **Horizon 2020 calls** could bring a solution to this wide-spread need. Also, other funding opportunities could be found in the **SME programme**.

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The presentations

- Introduction and objectives of the workshop - Gaëtan Dubois, DG Agriculture and Rural Development
- Results EIP-AGRI Focus Group Protein Crops - Chris de Visser, coordinating expert of the EIP-AGRI Focus Group
- EIP-AGRI website and interactive functions – Gaëtan Dubois, DG Agriculture and Rural Development

Introductory presentations 'round table'

- A view of the food sector – Francisco Javier Gutiérrez, Spain, Gestinver
- LEGumes for Agriculture of Tomorrow – Richard Thompson, France, Legato

Regional initiatives

- Certified non-genetically modified soya to contribute to Europe's protein supply - Mathias Krön, Austria, Danube Soja
- Sustainable soya in the North Atlantic Region Ruud Tijssens, Netherlands, Agrifirm
- Fababean in the UK, Roger Vickers, UK, PGRO
- Eurolegume project Eduardo Rosa, Portugal, Universidade de Trás-os-Montes e Alto Douro
- SOS Protein, action plan to move towards greater autonomy Jean-Luc Millécamps, France,Pole agronomique de l'Ouest

Introductory presentations 'yield gap'

- The French case, Etienne Pilorgé (CETIOM) - France
- Breeding priorities, Diego Rubiales (CSIC) - Spain
- Advisory services, Tim O'Donovan (Teagasc) - Ireland

Introductory presentations 'Building a market'

- The EU Feed Industry perspective, Zoltan Pulay (UBM Feed Kft)
- IMPROVE Food Opportunities, Denis Chéreau (IMPROVE)

Outcomes of the workshop

The agenda of the meeting was broad, the targets are wide-ranging. It is difficult to synthesise a single conclusion. However the meeting showed there is common ground, many similar knowledge-based opinions were presented in the breakout sessions. However, not unexpectedly at this stage, few facts and figures were presented and those that were shown differed between regions.

Different perspectives

Protein crops were discussed from the perspectives of different regions. Research needs were discussed from the farmer, food industry and feed industry perspectives.
The debate was launched with questions such as: What is the status of production/consumption of protein crops, what are the reasons for the current situation? How to reverse trends? Which crops/products do you consider to have the biggest potential? The participants illustrated the great diversity of perspectives when looking at protein crops. The responses to these questions went from "soybean is the one and only solution" to "what an amazing range of options are available to us". Due to the large diversity of pedoclimatic conditions all over Europe and also to the different end user needs (food, feed/ruminants, feed/monogastrics), various different examples of potential for grain legumes were highlighted. The discussion showed that there should not be competition between these opportunities and the following list shows the complementarities and synergies which came out of the breakout groups' debates:

- There is a lot of knowledge that needs to be communicated and shared among companies, institutions and farmers.
- All protein crops (grain legumes) are minor crops. As such, they have the disadvantage that crop protection products are scarce. The manufacturers do not consider these crops as having enough of a market to justify investing in research and development.

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- Grain legumes have a positive value in crop rotation. They provide nitrogen to the soil, improve the soil structure and play a part in pest control. But they can also have negative impacts regarding diseases and pests such as nematodes. Little is known about which nematodes are stimulated by protein crops or about how they affect the yield stability of all crops.
- There is a high variation in yield across Europe and across the different protein crops.
- Water seems to be a significant limiting factor in the production of grain legumes.

Different people have different drivers in mind: food, feed, environmental impact, anti-GMO. Nevertheless, the farmer has to sell the crop, so there has to be a market for the crop. In terms of regional initiatives, different opportunities were highlighted by workshop participants:

- Soybean is the benchmark for the feed industry.
- There are good opportunities to develop soybean production in Eastern Europe and other regions. However, the commercial routes still need to be developed to reach end users.
- Faba beans seem to be showing much potential in North West Europe
- The biofuel debate has significant side effects on the availability of feed stuffs. Co-products of biofuel production are valuable as raw material for feed production.
- It could be a good option to enhance on-farm production and use of protein crops.
- Concerning peas, currently the main grain legume produced in Europe, opportunities for the plant protein ingredients industries were mentioned.




What are the main research needs (technical, social-economic) for protein crops?

The following discussions on research needs came out of the workshop:

Farmers' perspective

Access to practical knowledge and best practices of protein crop production is required. Main items to be addressed are: what are the good varieties, what is their resistance to (a)biotic stress and how can crop diseases, pests and weeds be best managed in a sustainable way. Secondly, varieties should comply with market demands regarding quality (content, giving value to by-products). Finally, price information should be transparent and easily accessible in order to estimate the risk involved.

Feed Industry perspective

Many different ideas were discussed. Digestibility is an important characteristic and prices likewise. This will be key to managing the inclusion of protein crops in animal feed products. Giving value to side streams could be better developed but scale is an important issue here. Feed safety and how to guarantee this with varying raw materials as input is very important.

Food perspective

From the food perspective, it is important to pay attention to the traceability of raw materials while increasing plant protein products in the human diet. Also, the development of new sources for plant protein concentrates is important as is the development of products based on these materials. A wide variety of crops can play a role in this.

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Priority actions for yield gaps and building a market

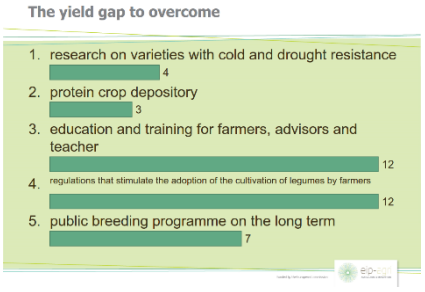
In parallel sessions the experts focused on the 'yield gap' and on 'building a market'. During these sessions, actions were identified which could contribute to finding solutions. Both parallel sessions had to identify 5 priorities (a wider range of actions were identified, see **annex 3**). When implementing the ideas, one should bear in mind that these actions should be taken as a whole and not as single actions. These actions are complementary to one another. The 5 priorities from each session are listed below, the percentages given are the results of the prioritisation carried out in plenary:

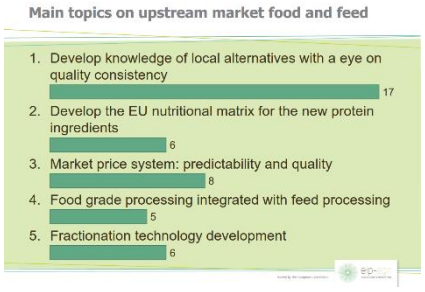
Recommendations from the discussions on closing the financial yield gap:

- Research on varieties with cold and drought resistance (11%)
- Protein crop repository (8%)
- Education and training for farmers, advisors and teachers (32%)
- Regulations that stimulate the adoption of the cultivation of legumes by farmers (32%)
- Long-term public breeding programme (18%)

Recommendations from the discussions on building a market

- Develop knowledge of local alternatives with an eye on quality consistency (39%)
- Develop the EU nutritional matrix for new protein ingredients (24%)
- Market price system: predictability and quality (18%)
- Food grade processing integrated with feed processing (11%)
- Fractionation technology development (18%)





Horizon 2020 and EIP-AGRI

The opportunities of Horizon 2020 and EIP-AGRI were explained to the participants. Both could provide funding and networking opportunities for those who want to take action on this topic. Participants were invited to cooperate both within and between countries to increase the share of protein crops in European agriculture. Hereby the fact was stressed that several exciting and encouraging activities are already taking place.

More information

- EIP-AGRI website:
  - **EIP-AGRI Workshop 'How to make protein crops profitable' webpage**
  - **EIP-AGRI Focus Group on protein crops page**
- Funding opportunities:
  - **EIP-AGRI Brochure on Funding opportunities under Horizon 2020 Calls 2015**
  - **H2020 thematic network call**
  - **SME programme**

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List of Annexes

Annex 1: final programme
Annex 2: participants list
Annex 3: Yield gap and build to market: full list

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Annex 1: Final programme

WORKSHOP PROFITABILITY OF PROTEIN CROPS
26-27 NOVEMBER 2014 - BUDAPEST, HUNGARY

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Final programme

Please note that this workshop will be held in English only.

Wednesday, 26 November 2014

12:30 – 13:30 Registration and lunch

13:30 – 14:00 Welcome and introduction
Introduction and objectives of the workshop
Gaëtan Dubois, DG Agriculture and Rural Development

14:00 – 15:00 EIP-AGRI Focus Group Protein Crops
- Results *Chris de Visser, coordinating expert of the EIP-AGRI Focus Group*
- Round table with representatives from farm, feed, food and research sectors
- Questions and answers session

15:00 – 16:15 Regional initiatives with questions and answers session
- Certified non-genetically modified soja to contribute to Europe's protein supply *Mathias Krön, Austria, Danube Soja*
- Sustainable soya in the North Atlantic Region *Ruud Tijssens, Netherlands, Agrifirm*
- Fababean in the UK, *Roger Vickers, UK, PGRO*
- Eurolegume project *Eduardo Rosa, Portugal, Universidade de Trás-os-Montes e Alto Douro*
- SOS Protein, action plan to move towards greater autonomy Jean-Luc Millécamps, France, Pole agronomique de l'Ouest

16:15 – 16:35 Coffee break

16:35 – 18:15 Interactive group sessions based on a regional and sector point of view.
- Status of production/consumption of protein crops, what are the reasons for the current situation?
- How to reverse trends?
- Which crops/products do you consider to have biggest potential i.e. competitive advantage in a regional context?

18:15 – 19:00 Outcome of the interactive group sessions

19:30 – 22:00 Networking dinner

WORKSHOP PROFITABILITY OF PROTEIN CROPS
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Thursday, 27 November 2014

08:45 – 9:00 Looking back at day 1 and introduction to the break-out sessions

9:00 – 11:30 Break-out sessions - **coffee during the sessions**

Break-out session topic 1
The yield gap to overcome: from seeds to farm gross margins
introduced by Etienne Pilorgé (CETIOM), Diego Rubiales (CSIC), Tim O'Donovan (Teagasc)

- Agro-economics and cropping systems; the farmers' needs
- Breeding priorities
- Advisory/extension services

Break-out session topic 2
Building a market: from farm to end-users
introduced by Zoltan Pulay (UBM Feed Kft), Denis Chéreau (IMPROVE)

- Feed strategies
- Food opportunities
- Logistics/labelling perspectives

11:30 – 12:15 Outcome of the break-out sessions – rebuilding the whole chain

12:15 – 12:30 Conclusions and closing *Gaëtan Dubois, DG Agriculture and Rural Development*

12:30 – 13:00 Lunch

EIP-AGRI Workshop 'Profitability of protein crops' Participants list

UPDATE 27 NOVEMBER 2014 – BUDAPEST, HUNGARY

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Mr	Millécamps	Jean-Luc	Pôle Agronomique Ouest	/
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Annex 3: Yield gap and build to market: full list

On the second day of the workshop, parallel sessions focused on the 'yield gap' and on 'building a market'. During these sessions, the participants identified actions that could contribute to solutions for these issues. The full list of ideas is presented in this annex. The results of the prioritisation setting during the breakout session are added between brackets.

Ideas on actions related to 'The yield gap to overcome: from seeds to farm gross margins'.

How to grow competitive protein crops?

- Regulations, not by putting up a blockade but by stimulating (13)
- DSS utilisation of legumes and DSS on cropping; Developing a method for DSS at farm level (9)
- Certified seed (encourage) (6)
- Disseminating knowledge among farmers 'what to do' and 'what not to do' lists (5)
- Standard ratios monogastrics adapted (industry and local utilisation) (4)
- Using existing knowledge in farmers, peer-to-peer; advisors, chambers, farmers' associations (4)
- Access to best practices knowledge (3)
- More research on intercropping (3)
- Agro-Environmental Premium, redesigning policy support, crop rotation more sustainable ('reward' on public services) (3)
- How to sell, creating a market demand (2)
- Independent advisory services (1)
- Long-term experiments are needed (1)
- Improving the agricultural structure
- Demonstration plots
- Manual on how to grow
- Promoting shorter production chains
- Agricultural college: improving young/future farmers' awareness

Breeding opportunities and priorities

- Testing a network of varieties on different (a)biotic sites, varieties resistance, yield trials in different regions/systems (24)
- Public breeding programme with long support, with a participatory approach (15)
- Varieties with drought and cold tolerance are needed; research and adapted higher altitudes (11)
- Introduce interaction between varieties in the breeding system. How to deal with certification needs? Experience Danube (4)
- Dual-purpose crops (oil, starch, fibre; enhanced protein) (3)
- Exchange of knowledge and material (3)
- Breeding for double/multiple cropping systems (2)
- Aphanomyces resistance is needed (research) (2)
- Biotic stress (1)
- Breeding technology (1)
- Extending the area of cultivation (e.g. 'winter pea')
- Governmental organisations force the task to experiment (not profitable for private companies)
- Solution to protein with grain legumes is … Use seeds grow previous crops

Knowledge transfer

- Educational training for farmers and advisors (10)
- A protein crop repository (10)
- Starting at formal education (4)
- A clear summary of results for advisors (4)

- Practical demos (4)
- A network (national and international) of advisors on protein crops (3)
- Sharing economical results, benchmarks (2)
- A platform of information, available in different languages
- Community of practice
- Writing popular science

Ideas on actions related to 'Building a market'

Food

- Food grade processing, integrate with feed processing (7)
- Fractionation technology development (6)
- Giving value to co-products (4)
- Campaigns for consumer awareness (health) (4)
- Development of new products & additives (4)
- Developing reliable supply chains (minimum quantity) (4)
- Meat replacement development (3)
- Link between food & feed research (3)
- Exploring new minor crops (2)
- Competitive prices (whole value chain) (1)
- Awareness on farmer level

Feed (clustered actions)

- Developing knowledge on local alternatives with an eye on quality consistency (11)
- Developing a European nutritional matrix (9)
- Sustainable footprint of the whole chain (8)
- Market price system: predictability & quality (7)
- Processing: valorising (co)-products/fractionating (feed & food) (4)
- Co-operation: breeders-farmers-processors-feed industry (6)

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The European Innovation Partnership 'Agricultural Productivity and Sustainability' (EIP-AGRI) is one of five EIPs launched by the European Commission in a bid to promote rapid modernisation by stepping up innovation efforts.

The **EIP-AGRI** aims to catalyse the innovation process in the **agricultural and forestry sectors** by bringing **research and practice closer together** – in research and innovation projects as well as *through* the EIP-AGRI network.

EIPs aim to streamline, simplify and better coordinate existing instruments and initiatives and complement them with actions where necessary. Two specific funding sources are particularly important for the EIP-AGRI:

- ✓ the EU Research and Innovation framework, Horizon 2020,
- ✓ the EU Rural Development Policy.

An EIP AGRI Focus Group* is one of several different building blocks of the EIP-AGRI network, which is funded under the EU Rural Development policy. Working on a narrowly defined issue, Focus Groups temporarily bring together around 20 experts (such as farmers, advisers, researchers, up- and downstream businesses and NGOs) to map and develop solutions within their field.

The concrete objectives of a Focus Group are:

- ✓ to take stock of the state of art of practice and research in its field, listing problems and opportunities;
- ✓ to identify needs from practice and propose directions for further research;
- ✓ to propose priorities for innovative actions by suggesting potential projects for Operational Groups working under Rural Development or other project formats to test solutions and opportunities, including ways to disseminate the practical knowledge gathered.

Results are normally published in a report within 12-18 months of the launch of a given Focus Group.

Experts are selected based on an open call for interest. Each expert is appointed based on his or her personal knowledge and experience in the particular field and therefore does not represent an organisation or a Member State.

*More details on EIP-AGRI Focus Group aims and process are given in its charter on:
http://ec.europa.eu/agriculture/eip/focus-groups/charter_en.pdf

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Join the EIP-AGRI Network & Register via www.eip-agri.eu

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